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Device for Removing Seeds and Pits from Fruit.

The preparation of fruit for culinary purposes or preserving is a monotonous and tiresome labor, at least the work of removing the seeds or pits. To facilitate the operation and render the task less irksome is the object of the inventor of the neat little implement shown in the engraving, an object we have found by trial it successfully accomplishes. Its operation is very rapid and its results satisfactory. It never fails to remove the pits from cherries and the seeds from raisins, grapes, cranberries, etc., leaving the fruit in excellent condition without crushing or bruising it.

THE ILLINOIS CHERRY STONER.

The machine is made, with the exception of the platform, A, of the receiver and the gutter, B, wholly of wrought iron, so there is no danger of breakage. There are no springs or complicated parts to get out of order and it is made in a substantial manner. The device is screwed to the edge of a table in the same manner as a "sewing bird" or other similar implements, so that it may be attached or removed instantly. The fruit is dropped into the receiver, A, Fig. 2, which, when the implement is attached to a table, is inclined toward the operator, and it rolls down the grooves to the recesses, which hold it in place to be operated upon. The hand then lifts forward the handle, C, connected, with the hooked forks, to a pivot. The ends of the forks or stoners are split and pointed, the points diverging from the center. These engage with the seeds or stones in the fruit and force them through the apertures in the bottom of the recesses in A. As the forks are raised the fruit adheres to them, and is raised as seen in the main figure, and thrown off by the plate, D, dropping into the gutter, B, and being thus discharged into a dish, the seeds dropping through the recesses in A to another vessel placed to receive them. Pierced glands of leather or other suitable material under A prevent the return of the seeds should they become attached to the forks.

This little machine leaves the cherries after being stoned round and plump, and from its rapidity of operation does not waste the juice. Patented by George Geer, April 9, 1867. For further information address Geer & Hutchinson, Peoria, Ill.

Telegraph Insulation.

C. F. Varley, well known for his skill as an electrician, and especially for his services in connection with the Atlantic cable, has lately obtained the following patent:

Insulators for telegraphic wires are usually made with an iron pin, coated with what is known as vulcanite, or hard vulcanized india rubber, and secured by means of plaster Paris, or other cement, inside of a porcelain or other earthenware cup inverted. As heretofore made it has been found that the vulcanite covering is liable to be porous, and full of what are known as blow-holes, and that the iron or steel pin is liable to rust, by reason of the presence of the vulcanite covering, and that the accumulation of the rust is liable to crack the vulcanite covering.

And the first part of said invention relates to a method of preventing the pin from rusting, and consists in coating the iron or steel pin with zinc, and then coating the zinc with tin, or an alloy of tin, preparatory to applying the vulcanite covering. The zinc is applied in the well-known manner of galvanizing iron, and the zinc is coated with tin, or an alloy of tin, by dipping in a bath of molten tin, or alloy of tin, in the same mannar as sheets of iron are usually tinned; and after being so tinned, the preparation of india rubber, or other vulcanizable gum, mixed with sulphur, is applied in the green or plastic state, and then subjected to the vulcanizing heat to be hardened, in manner well known to manufacturers of vulcanite. When so made, the vulcanite will be found to be solid and without blow-holes, and the pin will not rust, however much it may be exposed. The cement used for securing the pin in side the inverted cup is more or less porous, and the presence of such pores renders the insulation imperfect.

And the second part of said invention, which relates to a method of avoiding such defect, consists in saturating the cement with paraffine wax, to fill up the pores. In practising the second part of said invention, the iron pin, with its covering of vulcanite, is inserted in the cup, without touching any part of the surface thereof except the bottom of the inside of the inverted cup, and the intervening space is filled with cement, made, by preference, of one part of plaster Paris and two parts of Portland cement, but other cement may be used, such as plaster, or Roman or Portland cement alone. After the parts have been united by the cement, the whole is put in a bath of melted paraffine wax, at a temperature of about 224° Fahr., and there left until all bubbling ceases, which indicates that all the water has been expelled from the cement, and that the pores have all been filled. In this way all the pores and interstices are filled with paraffine wax, thereby rendering the insulation more perfect, and as there are no pores into which moisture can lodge, there will be no danger of fracturing the parts by the expansion of water in freezing, as heretofore.

The third part of this invention consists in covering the telegraph wire itself, at the point of support, and for a distance of a foot or more on each side, with a covering of hard rubber, similar to that placed on the insulator. This is carried into effect in the following manner, viz: First, pieces of ordinary galvanized telegraph-wire are tinned, and then covered with hard vulcanite, in the same manner that the insulator pins are covered, as above described. Secondly, these pieces of wire are spliced into the telegraph-wire at each point of support by means of the usual soldered joints. Prior to being used, these pieces are boiled in paraffine wax, and from time to time, when their surface becomes damaged by the solar actinic rays and exposure, they are washed and rubbed with paraffine oil or coal-tar naphtha, which renews the insulating power of the surface.

These insulators are principally useful where the wires are exposed to the spray of the sea, the rain washing them clean. This oil is very useful with all kinds of insulators, for the purpose of renovating the surface.

Improvement in Coating Metals.

John D. Grüneberg and Samuel H. Gilbert, of Spring Mills, N. J., have patented the following: "Hitherto it has been customary to cover sheet iron and copper, and probably other hard metals, with tin or alloys, by 'dipping' the former in acid, and then in a solution of the tin or alloy. The disadvantage of this process is that only small sheets of metal can thus be coated or plated, because, in preparing large sheets, it was found that a considerable portion of the surplus covering or plating would harden before it had run off from the lower end of the sheets, so that only part of said sheets would possess the proper thickness or surface. Our invention is specially intended to remedy this. We have found that long or large sheets of metal can be uniformly coated or plated in a simple manner, so that an article of metal is produced which possesses all the advantages of pure tin, and at a much less expense. If the sheets of tin or alloy are spread or laid upon sheets of hard metal so as to entirely overlap them, and the two sheets be subjected to rolling under a heavy pressure, the friction thereby will heat the metals in passing through the rolls, and cause them to unite firmly and with a uniform surface, so as to produce a superior article of metal.

"In carrying out our invention, we take blocks or sheets of any of the aforementioned hard metals, and roll them, in a cold or heated state, until they assume a certain thickness. We then make an alloy of either of the following: One quarter tin, one quarter copper, and one half lead, more or less; or six parts tin, one, antimony; or fifty parts tin, four, antimony, one, bismuth; or fourteen parts tin, one twenty eighth part zinc or copper, or one half of each of the latter ones; or pure tin, alloyed with as much of one of the above-named metals, or any other metal which will give it more stiffness and durability than it has in its natural state; or we use pure tin itself. A block of the tin, or tin or other alloy, is now cast in a mold of suitable size, which block is then passed through highly-polished rollers, so as to be reduced to a proper thickness to answer the purpose of common plating. The thickness may vary from one to thirty-five per cent of the original thickness of the block or sheet of hard metal selected. The strips thus produced are then severally spread or laid upon a smooth, level table. One of the aforementioned blocks or sheets of hard metal is now laid upon one of the strips of tin or alloy, which strip is then lapped over the former, so as to entirely cover it. Care must be taken to rub it smoothly, in order to prevent the formation of air blisters or wrinkles. The compound sheet or block thus constituted is now passed between highly-polished rollers under heavy pressure, whereby the metals become quite hot in passing through, thus causing them to firmly unite, and evenly, in one solid sheet, having either the tin or alloy, or other metal, for the outer coating.

"Instead of the above process, we prepare a solution of one pound of muriate or nitrate of tin, and ten gallons (or eighty pounds) water (98° Fah.), more or less. Into this bath we dip the desired sheet of hard metal for the space of five to twenty minutes, more or less, when the sheet will be found sufficiently covered with pure tin. It may then be polished or rubbed bright with soft cloth or leather. It will be found that steel or iron coated with tin or alloy can be used for cooking utensils, and for every article in which sheet tin is employed. The surface being entirely uniform, it cannot be affected by dampness, and thus serves to prevent rust.

"Our process prevents oxidation or corrosion in zinc. We can produce very large sheets thereof, when, by the process now employed, it can only be produced in small pieces. For lining bath tubs, water cisterns, and the like, our zinc will be found invaluable. For photographic and lithographic purposes, we interpose between the sheets of covered or plated zinc suitable pieces of tissue or other paper, muslin, or any equivalent fabric, and then subject them to another pressure; or we pass the metal between rollers having a slightly-roughened surface, so that the impression of the paper, fabric or rollers will be imparted to the metal, and cause its surface to assume a certain roughness necessary to photographic, lithographic, printing, or any other ornamental purposes.

"The uses to which our invention can be applied are numerous; generally speaking, to all purposes requiring stiff metal, which shall neither corrode, crack, nor be affected by heat or cold, and also to possess the advantages of pure tin."

Manufacture of Whiting and Paris White.

Take good limestone—though I believe any good lime will serve as well—and burn it in a kiln in the ordinary manner. Then slack the quicklime thus produced, and add so much water as will form a fluid having a consistency like cream Let this stand for several hours, to allow the foreign and gritty matter to subside. Then lead it into a tank, and blow up through it carbonic acid gas for some days or weeks, constantly agitating it by a wheel, after the fashion of a dairy churn, until the water ceases to give any appreciable alkaline reaction to the taste. The particles of lime are now again fully supplied with carbonic acid, and are then carbonate of lime, substantially the same article, chemically, as the rock in the earth, but exceedingly comminuted and void of foreign matter. It remains now to dry the mass by ordinary means, and the result is a whiting or Paris white, made without

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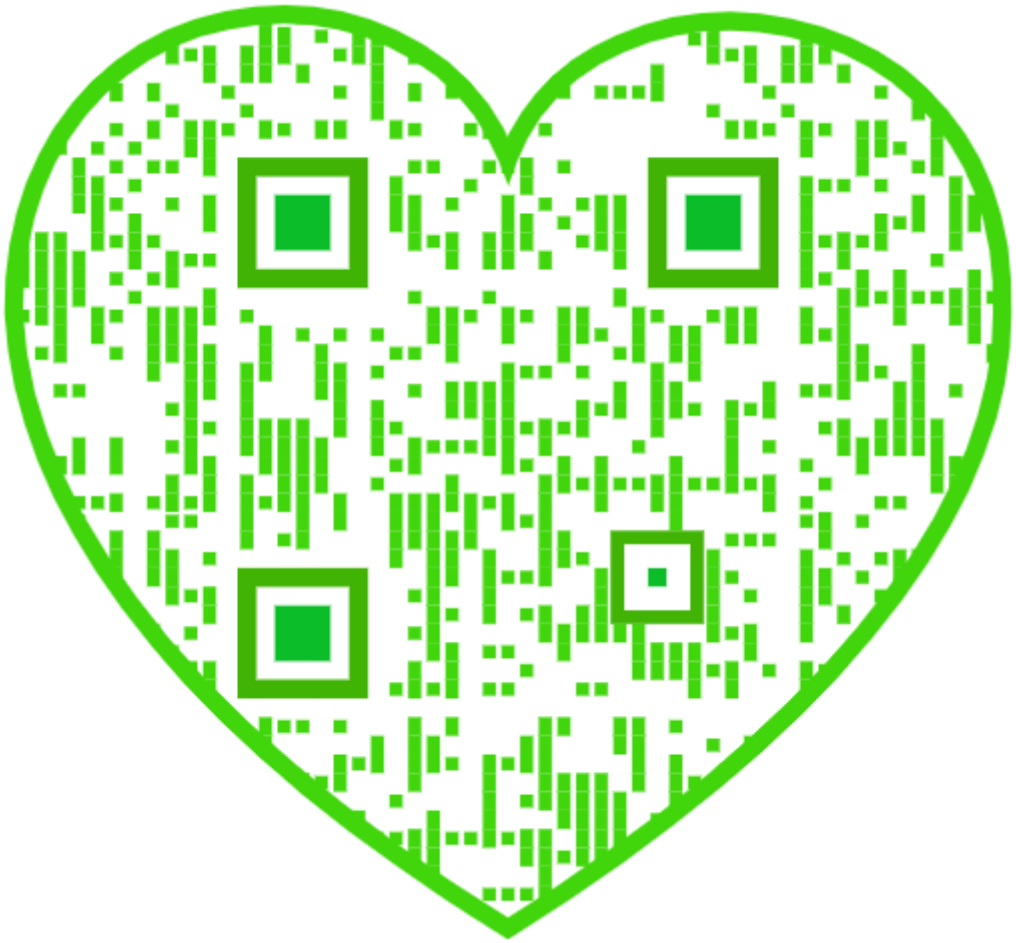

grinding, yet as fine as dissolving in water can make it. This may be used for all the purposes for which ordinary whiting or Paris white is used, with the same or a better effect.

Recently patented by Wm. W. Chipman, of Brooklyn, N. Y.

EDITORIAL CORRESPONDENCE.

Other Characteristics of Venice—Gondolas—The Plains of Lombardy—Great Battle Fields—Milan as a City—The Carnival—The Duomo with its Marble Statues—A Gorgeous Tomb The Splendid Monastery near Pavia—The Monks and their Occupations.

TURIN, March, 1868.

In dull, rainy weather, Venice is the place above all others within my knowledge where a sublime melancholy could be cultivated to great advantage. It is one of those peculiar spots that needs all the sunshine it can get to dispel the heaviness of death which hangs about its decaying grandeur. I met in Rome a jolly New Yorker who was compelled by sickness in his family to remain several weeks in Venice during the rainy season, and in answer to the question how he enjoyed it, he declared that he "felt like a drowning rat all the time." We considered ourselves, therefore, very fortunate to have passed our time there cheered by the presence of warm sunlight. Under such favoring circumstances I know of no situation more luxurious than to take a gondola and float lazily about the canals and lagoons of this most singular city, observing its many quaint old palaces, beautiful even in their fading glory, and the numerous water craft which flit about the waters, doing the business and pleasure of the people. Many persons whose knowledge of Venice consists in what they have read, are apt to entertain the idea that it is a city whose streets are all canals, and that no communication is had from point to point except by boats. This is an error. It is true that along the margin of the grand canal, and on many of the smaller ones, there are neither streets nor sidewalks. Nevertheless, I think there is scarcely a building in the whole city which cannot be reached either through some narrow, dingy street or by a foot walk. I suppose it is one of the most intricate cities in the world to pass through on land. A person not accustomed to its maziness would soon get bewildered by the numerous bridges, alleys, crooks, and turns, which present themselves at every point. There was some novelty in taking a boat to go to church, but as every thing is novel hereabouts, one soon gets accustomed to strange things. Many of the churches of Venice are exceedingly rich in fine sculpture and painting, chiefly the works of Venetian masters, and of whom Titian and Canova were the acknowledged leaders. The picture gallery contains Titian's first work, "The Visitation of Elizabeth," executed when he was but fourteen years old, also his last picture, a Deposition, painted when he was ninety-eight, though he was unable to finish it. He was a master of the art of painting the female form divine, and his Venuses rank among the most wonderful works of art in Europe. By the assistance of his mistress to serve as a model, Titian could supply the church and the world with pictures of Madonnas, saints, and sinners—it was all the same to him.

A Venetian gondola is a long, black, rakish-looking craft, which glides over the water with the grace and dignity of a swan. They are uniformly painted black, with a black cloth housing fastened over the little saloon, which affords a most cosy retreat from the elements. In the olden time, when extravagance was carried to a high pitch, the gondolas were painted and decorated according to the whims and taste of their owners; but at the present time custom, if not law, requires that they shall be of uniform color, simply for the reason that if this seemingly small matter of choosing a color were to be left to the discretion of the owners, they might indulge a variety of tricks and fancies for the purpose of catching customers, to the injury of those less able to compete with them. A gondola and one gondolier costs twenty cents for the first hour, and ten cents for each subsequent hour. A gondola with two gondoliers can be hired for twelve francs per day—equal to $2.40 in our money.

We chanced to leave Venice the day after the close of the carnival. It was estimated that at least three thousand people were to take the first morning train, therefore there was an unusual stir. The canals were literaily alive with gondolas and other small water craft, hurrying passengers and trunks to the station. It was very interesting to notice with what skill they pass each other in the narrow and tortuous canals which thread their way through every part of the city. Before turning a corner, and to prevent collisions, which rarely ever happen, it is the habit of the gondolier to utter a sharp cry to give notice of his approach, which is quickly responded to if another is coming in the opposite direction. There is nothing like incivility or even real rudeness between the gondoliers, although to one not familiar with the language their colloquies may sometimes appear to be sharp. Upon arriving at the station the scene was one of great confusion, which was greatly increased by the fact that Venice, retaining its ancient right of a free port, all baggage is subject to examination before being allowed to pass beyond the city limits. Seats, however, were somehow provided for all, and as is usual at nearly all the European railroad stations, the passengers are seated about five minutes before the train starts, during which interval everything is so silent and still it is difficult to believe that thousands of people are impatient for a start.

The route to Milan carries the tourist through Padua, Verona, Vicenza, Brescia, and Bergamo, all ancient cities of interest, but for the want of time I could not stop to visit them. I was, however, much interested in getting a good view of the fortress of Peschiera, situated on the Mincio, where it issues from the Lake of Garda. It was one of the famous *quadrilaterals* of the war of 1859, and is but a short distance from the battle field of Solferino. It will be recollected that this fortress was invested after the victory of Solferino, but the siege was cut short by the peace of Villafranca.

I think it would be difficult to find a section of country finer than that which lies between Venice and Turin, and especially that portion of it known as the plains of Lombardy. These plains derive their fertility in a great measure, no doubt, from the waters which flow down the Alps into and through the beautiful lakes of Garda, Como, and Maggiore, which constitute receiving and distributing reservoirs. The country is covered by a network of canals, which are employed for the transportation of merchandise, having numerous off shooting rivulets for irrigating the soil. Mulberry trees and silk, indian corn and rice, wheat, potatoes, and cheese, besides the vine, olives, and chestnuts, and a great variety of fruits, are its abundant productions. Ir is a country worth fighting for, and has been a bone of contention since the invasion of the Lombards, or Longbeards, in 568. Its cities were among the most splendid and populous in Europe, and its history is written over in blood shed upon the fields of Novara, Pavia, Cremona, Lodi, Marengo, Magenta, and Solferino. So terrible has been the destruction visited upon some portions of this fair country, that when Frederick Barbarossa left Milan, in 1162, its inhabitants were all scattered, and nothing was left to mark its site but shapeless ruins and the old church of St. Ambrose, which now exists as among the most venerable Christian edifices in Italy.

Milan is one of the most beautiful cities in Europe, having broad streets, fine parks, drives, and promenades, which are kept with scrupulous neatness. The Milanese pride themselves upon having the cleanest city in Europe, and are disappointed if strangers fail to recognize the fact. It is a miniature Paris in the general aspect of its streets and fine shops, and it may be interesting for the ladies to know that at one time Milan led the fashionable world, especially upon the all absorbing topic of bonnets, and the word milliner is a namesake of the fair city.

The King Victor Emmanuel contrives somewhat shrewdly to propitiate the favor of the larger cities by quartering branches of the royal family among them. The crown prince Humbert, who is soon to marry his cousin Margaret, the daughter of the king of Saxony, resides permanently in Milan, and strives to keep up a small court. The prince Amadeo resides at Naples, and other members of the family so far as their numbers will admit, are scattered about other parts of Italy, while the poor king lives all alone at Florence. The Church of Rome forbids intermarriages between cousins, therefore, in order to bring about this marriage, it became necessary to apply to the Pope for a special dispensation, which the papers declare was awarded upon the payment of twenty thousand francs. The stock of royal boys and girls in Europe has nearly run out, and there are fears that the blood may become corrupted by a resort to plebian connections.

By a special indulgence of St. Ambrose—patron saint of Milan, who appears to have had an eye in this matter toward the business interests of its inhabitants—they are permitted to extend their carnival three days beyond the time allotted to its celebration in other cities. A carnival in Italy is an outburst of popular festivity, which is allowed to manifest itself by unusual license for several days previous to the lenten fast, when every body is expected to sit down hungry, in sackcloth and ashes. We happened to arrive in Milan the day previous to the opening of the grander ceremonies, for which unusual preparations had been made, hoping thereby to draw crowds of strangers and the country folks. During the afternoon the streets swarmed with the people, eager to enjoy the fun and excitement, and certainly the display was very extraordinary. There were all sorts of vehicles and ridiculous costumes, moving in procession through the principal streets, the scene being enlivened by bands of music and the promiscuous discharge of confetti upon the crowd of pedestrians, many of whom resembled the old limekiln man, who some years since was a character upon the streets of New York. I cannot undertake to describe all the strange looking vehicles that were rigged up for the occasion, but I remember one that resembled an immense lobster, drawn by six horses, with outriders in livery, the space in the vehicle being occupied by men in priestly robes, and with large hats made to resemble crows' heads, that kept up a continual "cawing" at the crowd. Another vehicle was a dilapidated old mill, with the word "Rome" painted upon it in large letters. Another was designed to represent a blacksmith's forge, with men employed in forging out implements of war, and receiving at the same time the benediction of a priest, which I understood was intened to burlesque the Pontifical government, which combines both war and religion. A procession of sixteen war chariots, made of half barrels mounted upon two wheels, in each of which chariots stood gladiators, drawn by mules having cardinal's hats tied on between their long ears, and led by colored grooms in fancy costumes, the whole designed to caricature somebody, was also a very noticeable feature. Two days were devoted to this more amusing feature of the occasion, and one day was given up to a display of the finer turnouts, into which the Prince Humbert and all classes of citizens mingled with freedom.

The most interesting single object in Milan is the wonderful Duomo, or Cathedral. From a little descriptive guide book which has been published for the convenience of visitors, it appears that the foundations of this edifice were laid in 1386, by one of the dukes of Milan, who made a vow of some kind, the nature of which is carefully concealed from the reader, but it is conjectured that he wanted in some way to wipe out an awful crime, and knew not how else to do it. It is built entirely of white marble, and since commenced it has occupied the skill and attention of nearly two hundred different architects and engineers, among whom I notice the names of Leonardo da Vinci and Giulio Romano, who were celebrated painters. It is difficult for the mind to conceive of such folly and prodigality of expenditure, but the author of the guide before me states that 550,000,000 of francs have now been expended upon its construction, and from present appearances it will require many years yet to finish it. The Cathedral is intended to be Gothic, although it is not purely so. The exterior has thirty-two fine pilasters, richly decorated by a great variety of statues and figures; the roof is a wilderness of spires, pinnacles, and points, into the recesses of which there are also many marble statues, frequently the work of the best masters of Italy. Four intelligent guides are regularly employed to conduct visitors to the roof, and glasses are brought into requisition to enable the eye to appreciate some of the master pieces of Canova, which are placed in niches in the spires. The guide informed me that there were more than seven thousand different marble figures on and within the Cathedral. Nobody is expected to have patience to read a long description of this Cathedral, therefore I will conclude what I wish to say about it by referring to one of the many interesting things to be seen inside. I refer to the gorgeous tomb of St. Charles Borromeo, who was once Archbishop of Milan. St. Charles belonged to one of the richest families in Italy, and during the time of his archbishopric he not only devoted his wealth to the good of the church, but during the time of the plague he exhibited a degree of heroism and self sacrifice which has endeared his memory to all the generations which have succeeded. The tomb adjoins the great subterranean chapel called the "Scurolo," and receives a very "dim religious light" through a glazed opening in the pavement of the church, enclosed by a fine bronze railway, upon the top of which a row of lamps are kept constantly burning. Before entering the chapel a fee is exacted from all visitors, and upon payment being made, a priest with lighted candles proceeds to conduct the way downward, through an elegant portal, supported upon beautiful columns, which leads to the gorgeous sepulchre, the ceilings of which are ornamented by eight massive bas-reliefs in silver, and other rich devices intended to illustrate the virtues and more remarkable events in the life of St. Charles. Above the altar stands an elegant bronze sarcophagus, with elaborate silver ornaments, all of the most exquisite workmanship. After the visitor has had time to admire the rich decorations, the priest, by means of delicate mechanism, begins to unfold the sarcophagus, which reveals an elegant casket made of plates of rock crystal, bound together by heavy silver mouldings, the gift of Philip IV. of Spain. Within this casket lies the emaciated body of the saint, dressed in the gorgeous robes, jewels, and insignia of his priestly office. Suspended to the lid is a magnificent cross of emeralds and diamonds, the gift of the Empress Maria Theresa, of Austria. For nearly three hundred years a daily mass has been performed in this chapel tomb, and thousands of people have wept and prayed with grateful hearts for the continued intercession of the saint.

A pleasant carriage drive of fourteen miles from Milan, leads to the Certosa, the most splendid monastery in Europe, founded by Visconti, Duke of Milan, to expiate for the murder of his father-in-law. The front of the church is one mass of bas-reliefs in marble, while the interior is the richest in Italy. The altars and chapel are composed of mosaics and precious stones of lapis lazuli, rubies, agate, porphery, jasper, and the rarest oriental marbles and alabaster. The pictures and frescos are by the first masters of the period. I never before beheld such liberal adornment and wasteful extravagance, and all for the purpose of washing a guilty soul of the crime of murder, which no earthly law could reach and punish. Such was the exemption accorded to the wealthy and powerful criminal of those ruder times. The monastery and cloisters adjoining the church are extensive and elegant, and the only occupants are twenty-four Carthusian monks, who never pass beyond the limits of their seclusion. They have each a small dwelling opening upon the grand cloister, with two small rooms and a little garden in the rear. They have little or no intercourse with each other, and their food is handed to them through a small trap door, let into the wall facing the court. They occupy themselves in reading their breviaries, saying prayers, and attending to their other religious duties. In other words, they keep fat on poor living, and consider it their religious duty to crucify the body for the good of their souls. They subsist upon the scanty revenues of some small endowments, and employ a little of their leisure from religious duties in cultivating vegetables and flowers. The Certosa furnishes a magnificent retreat for those who, tired of the follies and vanities of the world, prefer laziness and seclusion to the industry and active outdoor life among men.

At this point I propose to lay down the pen of a wandering scribe, and to quit the field, having nearly completed the somewhat extended tour which I originally marked out.

S. H. W.

MAKING WHITE LEAD.—A few weeks ago we made a note of the fact that a new process for producing an excellent article of white lead, had been devised by M. A. Giffard; the following is the plan referred to: Granulated metallic lead is placed in a barrel, with one fourth its weight of water. By a suitable arrangement the barrel and contents are rotated about forty turns per minute, while a continuous current of air is forced through at the same time. After revolving for about two hours almost all the lead will be oxidized, and now a current of carbonic acid is substituted for the air, and the rotation continued for five hours longer, when the true white lead, which constitutes almost the entire contents of the barrel, can be separated by decantation, washed and dried.

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Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

Steel and Iron Rails.

MESSRS. EDITORS:—The following remarks, though containing nothing absolutely novel, may be of interest to some of your readers:—

Locomotive and car wheels slide more frequently on steel rails than on iron ones, on account of the smoother surface of the former, but this loss of adhesion, and consequent loss of speed, is in reality so small, that it is more than compensated by the advantages gained, viz:

1. The grinding action, which, on iron rails, is greater than required for adhesion, is dispensed with, and the wear of rails and tires alike is reduced.

2d. In curves, the outer wheel must traverse a greater distance than the inner wheel, the outer wheel therefore must slide part of the distance; both wheels making the same number of revolutions. The smooth steel face offers no resistance to this necessary performance, but the uneven and often laminated surface of the iron rails causes so much friction that the axles are subjected to a very dangerous torsion or strain. It is a fact that breakage of axles generally happens while passing a curve.

In adopting the use of steel rails many engineers have retained the old-fashioned, low patterns, used for iron rails, say 3½ inches, or 3¾ inches high, with base of the same, or even greater width than the hight. Without changing the weight a steel rail may be made 4 inches or 4¼ inches high, instead of 3½ inches to 4 inches respectively, because the sectional area of head given to an iron rail, in order to resist compression and exfoliation, is not necessary in a steel rail. The base of a rail should be less than the hight, because the strength against deflection or transverse pressure increases in the ratio of the simple width and the square of the hight.

The slow abrasion of steel rails is proved beyond doubt, and on that account their life may be calculated at twenty years, or more; but their endurance against continual tensile strain may not, and probably will not, be in the same proportion. It is, therefore, of the utmost importance to give a hight of profile which will obviate, or, at least, diminish this strain.

The advocates of broad bases and low profiles maintain that the former is necessary to prevent the rails from falling over! and that the latter are sufficient for close bearings—says 2640 cross ties to the mile, 2 feet from center to center. This is erroneous. On railroads on the European Continent, rails 5¼ inches high, and with 3¾ inches base, are laid on pine wood cross ties, which do not hold a single spike tight after two years' use; nevertheless, the rails do not fall over. The number of cross ties is not so important as the substantial manner in which they are laid, viz: firmly, and on a perfect level.

It is no uncommon occurrence that, when the spikes hold tight, some cross ties hang actually suspended from the rail, instead of supporting it. Cross ties sometimes will settle below the common level. The consequence is, that if one cross tie settles, and the bearings next to it remain firm, the actual distance of bearings is doubled. Would any of the low rails be strong enough to resist the increased transverse pressure?

Some manufacturers, who were over anxious to promulgate the economical advantages of steel rails, favored the almost general illusion that steel rails could be made much lighter than iron rails. This is correct in theory, but not applicable on railroads on which rails of less weight than 60 lbs. per yard are considered sufficiently strong for heavy traffic.

Recently, a contrivance has been adopted on several railroads for fastening the rail ends to the cross ties without punching spike-holes.

The base of rails on most American railroads is sufficiently wide to allow of punching it on both sides without endangering the stability of the rails.

Any steel rail, no matter of what make, which is less safe in that respect than an iron rail, and consequently lacks toughness, should not be used at all. The interests of the public demand that the innovation of steel rails shall not only benefit the stockholders by a saving of expenses in maintenance of roadbed and rolling stock, but that it shall also put a stop to the frequent disastrous accidents from broken rails. Railroad managers are apt to disregard this so long as the percentage of broken steel rails is not alarming from an economical point of view, whereas it could be entirely avoided. I also doubt, that any contrivance will secure rails so completely against longitudinal motion, as the firm hold which the notches or holes punched in the rails give to the spikes.

A. E.

New York city.

A Literary Bureau Wanted.

MESSRS. EDITORS:—There is a want in the literary world similar to that which your journal or your house supplies in the scientific world. An inventor knows to whom he can apply to have the product of his brain brought into notice. He will put himself in the hands of MUNN & Co., and feel sure that they will use every exertion to put his invention before the public. Without such an agency as yours, it is certain that many an ingenious invention would never have seen the light.

Now I wish to see an agency established in New York which will do for the world of writers what you are doing for the world of inventors. There is plenty of mind running to waste in our country, not for want of self employment, but for want of knowing how to put in form and have published the written products of that mind. Take a case in point. A thoughtful student writes out the result of much reading and thinking in a book; he puts his mind into a volume. If published, it will be read; it will instruct, or what is better than mere instruction, it will stimulate mind and excite thought. He endeavors to have it put in print, but from poverty cannot afford it; from want of friends and influence with publishers he cannot have it brought out. He fails in his effort to reach the public, and the world is not bettered or benefited by his thought.

Let an agency be established to which manuscript can be sent, and to which authors can apply; let this agency communicate with publishers, bring new works to their notice, contract with them in regard to publication, and in every way aid the author as you now aid the inventor. Such a plan, well carried out, will not only help the writing public, it will also tend to make New York the emporium of literature in this country.

JOHN FENTONHILL.

Richmond, Va.

[We apprehend that the position of examiner for such an agency would not be very eagerly sought; the examination and frequent rejection of manuscript is one of the most unpleasant duties of the editor, and those persons not in a position to know, can hardly realize the quantity of matter submitted to our literary, magazine, newspaper, and book publishers. Some of our large publishing houses employ persons who devote their whole time to reading manuscript thus submitted, a much larger proportion of which is rejected for lack of merit than ever finds its way into print.—EDS.

Insecurity of Buildings---Protection from Fire.

MESSRS. EDITORS:—I was much interested in your remarks in a recent number about the construction of flues in stores and other buildings, particularly where steam boilers are used. It suggested some reflections which I will endeavor to express. Every engineer knows the fact expressed in your article and can confirm it and add scores of others to the list if it would do any good. This is, however unfortunate it may be, that every one who has owned a steam engine for a few months thinks himself an engineer and adopts the principle of every man his own engineer. This is the key to the whole mystery. If they were the only sufferers by their own enginering, the public might not complain; but such is not the case, as their malpractice is productive of great insecurity, causing enhanced rates of insurance and the consequent depreciation of surrounding property. This is entirely unnecessary, provided the boilers are properly set and flues properly constructed. There is no more risk when the proper precautions are taken than there is in boiling a potato pot over a cookstove.

I will mention a case or two that have recently come under my observation. A slight wooden structure for a smith's shop with some half a dozen forges and heating furnaces, with a steam boiler of the capacity of twenty horse-power. The roof was flat, made of inch pine boards and covered with tarred paper. The chimney, or rather smoke pipe of the boiler, passed through the roof and was nicely fitted to the wood and made water tight by the tarred paper; the smoke pipes of the forges and furnaces were fitted with the same care and nicety. The brick setting of the boiler was carefully placed in contact with the wooden wall of the building. This was the general style of the engineering of the whole concern. It went into operation and in less than a year was totally destroyed by fire, loss reported at $30,000 to $40,000, and, fortunately, no insurance.

Another concern is now nearly ready to go into operation. The works are for a wood planing and sawing mill and the manufacture of sashes, blinds, doors, and for wood turning, with a 60-horse engine and boilers to correspond. The structure is of wood, three stories high, something like 100 by 50 feet plan. The two boilers are placed outside of the building on the windward side with nothing to break the wind setting in from the bay. The boilers are set in brick work carried one course of brick above their tops and are suspended at each end by bolts passing through lugs on each side and at each end of the boilers, and secured by passing through timbers running across the brick work, with their whole under surface in contact with the heated bricks of the setting in which the expansion and contraction of the boiler is sure to make cracks and fissures its entire length. The fuel will be shavings, sawdust, waste stuff, etc. On the top of this boiler setting is erected a structure intended for a kiln for seasoning the lumber to be used in the works. This structure is of pine and spruce, placed in direct contact with the heated brickwork of the boilers, in order to utilize the heat that would be otherwise wasted; certainly economical! the underwriters will probably appreciate it! F. W. B.

Atmospheric Temperature and Snow.

MESSRS. EDITORS:—The explanation you gave of the popular saying, "It is too cold to snow," on page 151, current volume, is not in my opinion the correct one. It is a fact, and you like "facts," that at present it is here two degrees above zero, and it is snowing very hard and very boisterous, and all the snow that has fallen to-day has not prevented a great many frozen ears and noses.

Another fact is, we can make it snow whenever we like if the weather is cold enough, on a small scale to be sure, but really to snow, by simply ejecting a current of moist, warm air into the cold atmosphere; for instance, when the doors of a church are opened after service on a very cold day, the moisture in the warm air is immediately frozen and falls in a small shower. This is no rare phenomena—exactly so in nature. To snow there must be a meeting of heated moist air and cold air. Now suppose we have a duration of cold weather, we know that there is (comparatively) no moisture in the air, because cold air cannot retain moisture, and consequently it cannot snow, and however much lower the temperature may fall, there will be no snow; "it is too cold to snow." We must wait till a warm current comes from another quarter laden with moisture, and as soon as this happens, two effects are produced, first; by the mixture of warm air the temperature rises; second; the warm air is cooled and is no longer able to retain its moisture. If this warm current comes on a low stratum and is warm enough we have a thaw and it rains, if not warm enough to raise the thermometer above 30° it will snow large soft flakes of warm snow, but if this warm current comes to us as is the case here at present when the thermometer has been ranging from 20° below to zero, then it is only able to raise the temperature a very little, but it is compelled to yield up its moisture and we have a storm of those beautiful crystals of hard, crisp snow that is only known in our high latitudes, consequently it is correct to say "it is too cold to snow," when we have a continuation of cold, dry weather, and we will have snow when a current of warm, moist air comes to raise the temperature and yield up its moisture.

F. D.

Montreal, P. Q.

Steam Economy.

MESSRS. EDITORS:—The benefits derived from steam expansion have been the study of the engineering world from the time of Watt, who first laid down the law of expansion. The experiments of Isherwood, Dickerson, and others in regard to the economical use of the expansion of steam has not been satisfactory.

Upon the trial between the *Arethusa*, built by Penn, the *Octavia*, built by Maudslay, both favorite builders for the British Government, and the *Constance*, built by Randolf, Elder & Co., the latter furnished with their compound standing engine—on a voyage of these steamers to Madeira, the *Constance* proved to be the fastest boat and consumed from 25 to 30 per cent less coal, all of the boats being built from the same models.

A recent test of this new engine was made at Buffalo. The consumption of fuel was the only point sought to be arrived at. The propeller upon both tests was made fast to the dock and, with an equal pressure of steam, making the same number of revolutions, a saving of twenty-one and one-half per cent resulted in favor of the combined cylinder engine.

In carrying higher steam, say eighty pounds per square inch, with boilers suitable for the pressure, there would be still better economy.

There is now being altered in this city, changing to the combined cylinder, the engines of the propellers *Nebraska*, *Colorado*, *Idaho*, and *Free State*, which will fairly demonstrate during the coming season to the relative value, and what actual saving there is to be derived from this form of combination.

DAVID BELL.

Buffalo, N. Y.

Aluminum Bronze.

MESSRS. EDITORS:—As a completion to what you have said in your last number of the properties and uses of aluminum bronze, I beg leave to add a few words about the preparation and cost of this important metal.

In order to have a good alloy, the copper used must be quite pure; the best is copper deposited by electricity. Next to this is the copper of Lake Superior, which also gives an excellent alloy. Almost all other coppers fail, because they contain iron, for which aluminum has no affinity. Another thing to be observed is to remelt the alloy two, three, and often four times. The first melting is very brittle, the second is less, and the third generally gives off a good metal. Hammering also improves the strength and tenacity of the metal.

Aluminum bronze would cost nearly five times the price of gun metal. For mathematical and astronomical instruments, this is no doubt the best and comparatively the cheapest metal that could be used.

CHAS DE G.

Seton Hall, South Orange, N. J.

Neutral Acetate of Lead.

MESSRS. EDITORS:—One of your correspondents complains (p. 247) that in order to make neutral acetate of lead he has to take more than 51 parts of acetic acid against 111·7 of oxide lead, which should be the right proportion after the theory of chemical equivalents. Allow me to remark that the compound ($PbO, C_4H_3O_3$) naturally possesses, with a few others, the peculiarity of an alkaline or basic reaction toward the usual tests, and in order to make it behave neutral, an excess of acid above the regular atomic relations has to be added.

P. H. VANDER WEYDE, M. D.

How is a Ball Kept in a Fountain Jet.

MESSRS. EDITORS:—In regard to the force which retains a light ball in the jet of an upward-spouting fountain, I am inclined to believe that its position is assured by the pressure of the atmosphere. A cannon ball flying rapidly through the air induces an inward tending current of atmospheric air, caused simply by the momentary vacuum made by the rapid flight of the ball. This inward flowing current has, of course, a tendency to suck or draw in any light, small body and induce it to pursue the line of flight of the ball. A stream of water moving rapidly upward through a tube seems to have a similar effect. If the tube be removed would not the atmospheric pressure still be less inside the stream than outside, and would not any small body, not too heavy, be drawn within the influence of the stream; that is the influence of the in-drawing current of atmospheric air?

West Pittsfield, Mass. P.

[We think the theory of our correspondent has considera ble plausibility.—EDS.

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Parasites on Insects, and other Animals.

Messrs. Editors:—For the information of your correspondent who mentions, p. 259, his observations about the house-fly parasite, we observe that this parasite is well known and described in books on that subject, is even quite common in some localities, and has nothing to do with the transmission of contagious diseases. As far as our present knowledge on the last subject extends, it appears that the organic structures which undoubtedly propagate contagion belong to a much lower stage of organization than parasites; one so small as to be only visible with the strongest magnifying powers, and their germs, seeds or eggs escape our most careful research altogether, as they appear to be present in the very dust of the air we breathe. The only fact known in relation to flies and cholera morbus, is that it has been observed in many localities that at the time this disease was raging, the usual number of flies was either entirely absent or at least considerably diminished, which is an additional proof that flies are scavengers of the atmosphere.

In regard to insect parasites in general, the species which infect the fly is called *acarus*. The smallest acarus is found on the clothes-moth, the largest on the beetle. They are all very similar to the so called chicken-louse, and also resemble slightly the cheese mite. They are usually blind, have two or four suckers or points at their heads, and, like spiders, eight legs which are commonly arranged two and two, close together. The ticks, lice, flees, bed bugs, etc., have to the contrary eyes and only six legs, and belong to a different and higher order.

The most curious of these parasites is the one which selects the respiratory orifice of the common garden snail; it slips through the opening the moment the snail dilates it to respire air, and lays eggs in the interior membrane, where they are developed. The young, after being hatched, feed upon a portion of the snail's body. The water snail is tormented with a parasite of the family of the *Distoma*, which attaches itself by a series of hooks to any part of the body or mantle. They sometimes surround the whole animal like tufts of thread.

Diverse reptiles, like serpents, and even fishes are affected by parasites, who attach themselves to the fins or tail, and slowly destroy these parts of the suffering animal. They are often observed among fish captive in an aquarium, and I once found on such a parasite who had grown large and fat in destroying a small fish in one of the aquariums I used to have in operation, in the Cooper Union in this city, a second parasite who lived on the first. These parasites of parasites are a great curiosity, however not so very uncommon, they are repeatedly observed by industrious investigators.

In a hygienic point of view the study of this subject is most important, and at the present day undergoes a thorough investigation by observers, aided by the most powerful microscopes. To give the reader an idea of this field of research, I will only name some of the varieties of parasites found on different animals.

Docophorus ictervides, found on every species of ducks; *Neimus obscurus*, found on sand pipers, godwits, etc.; *Neimus rufus*, found on hawks, falcons; *Docophorus lari*, found on gull tribe; *Trichodeites sealaris*, found on oxen, asses; *Tediculus capitis*, found on head of man; *Tediculus vertimenti*, found on clothes of man; *Tediculus tabescentium*, found on bodies of men dying of marasmus; *Tediculus inguinalis*, found on groins, armpits, beards of man; *Acarus scabiei*, the itch insect; *Sarcoptes scabiei*, produce the scab in sheep, and has lately been discovered to be the cause of the mange in dogs. In one pint full from a dog suffering from this disease, as many as thirty or forty of these parasites were found.

I could fill with such lists several columns of this paper, to show how thoroughly the subject is being investigated. I will only add that of all these parasites, and several hundreds more, their habits have been described, their mode of propagation, number of eggs, time and manner of hatching, means of their extermination, etc. They infest most of our articles of food, flour, cheese, sugar, dried figs, and other saccharine fruit, others live on contents of our insect collections, butterflies, etc.; others in the crusts of ulcers, etc.

I refer those who wish to know more on the subject to Rheidi's work "*Treatise de Gene ratione Insectorum*," and Denni's "*Monographia Anaplurorum Britanniæ*," Bohn, London. V.

New York City.

Polygons.

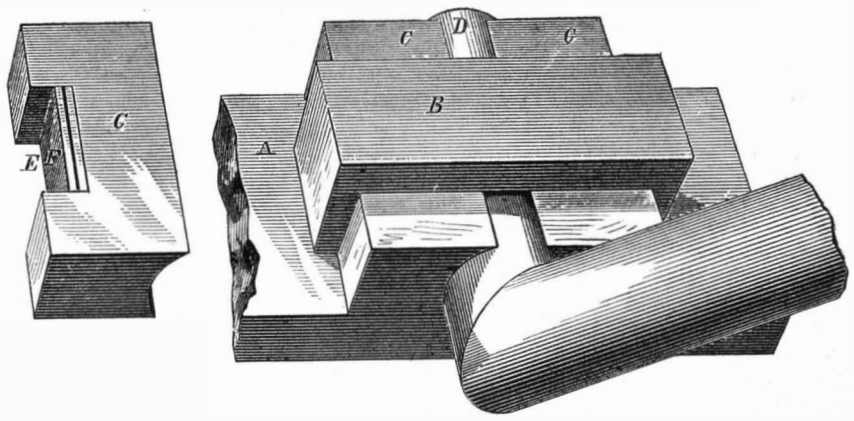
Messrs. Editors:—One of your correspondents wants to know (see page 247) the extreme radius of a 52-sided polygon, the radii of which are 12 feet. When we take into consideration that each side of such a polygon is the chord of an arc, of one 52d part of 360° or the double sine of half that arc that is the double sine of 3° 27′ 40″, we find for the radius 1 this side, according to the tables, equal to 0·120760, and therefore when the side is 12 feet, the radius will be 12 divided by 0·120760, that is 99 feet 4½ inches very near, or within less than 8 inches equal to 100 feet. As 12·5 is the eighth part of 100 we see that this teaches at the same time that the eighth part of the radius is only a little larger than the polygon of 52 sides, and may be used for it in case that an error of one 250th part of the radius may be neglected. V.

The New York Lyceum of Natural History.—This society will celebrate its fiftieth anniversary, at the Cooper Institute, on Wednesday evening, April 29th. Addresses are expected from Dr. Barnard, President of Columbia College, Dr. John Torrey, Rev. Dr. Thompson, and other gentlemen eminent for their scientific attainments.

Improved Attachment to Mowing and Reaping Machines.

The rattling noise of the working parts of mowing and reaping machines is annoying and liable to frighten horses which have not become used to it. But the wear of the wrist pin, and its boxes, connected with the cutter bar, is a more common evil. There is a great strain on these parts, and it is sometimes difficult to keep them in working order. The device shown in the accompanying engraving is designed to make the pitman connection as enduring as the rest of the machine, and to prevent unnecessary noise in working.

A is a section of a cutter bar, having a frame, B, attached, in which are halved boxes, C, for the reception of the wrist,



KINTNER'S PATENT BOX FOR HARVESTER PITMANS.

D, of the pitman. The rear part of the boxes have vertical grooves, E, embracing the uprights of the square frame, B, and having a suitable packing, F, of rubber, or some elastic substance, so that when the wristpin is inserted between the boxes it is held firmly, but without binding. Thus any sudden jerk of the material being mowed or reaped against the outer end, or any portion of the cutter bar, is relieved by the elastic packing, and there is less wear on the wristpin, always a weak part.

The patent was issued to Jacob L. Kintner, Rock Haven, Mead county, Ky., who will give any additional information as to rights, etc., if addressed as above.

Patent Telescopic Speaking Trumpet.

Frederick J. Miller, of Brooklyn, N. Y., has invented and constructed a handy speaking trumpet, which is made in sections sliding one within the other, and the whole when closed being contained within the bell, as seen in the smaller figure. When in this position the sections are held together by a simple catch on the mouthpiece engaging with a circumferential wire around the bell. The trumpet may be extended for use, as in the larger figure, instantly, when it is in all respects equal to one made in the usual way. A trumpet made in this style can be easily carried in the pocket, and is always ready for use and never in the way when not wanted. For firemen, sea captains, and others, it will be found to be exceedingly convenient.

Martin's Patent Safety Swing.

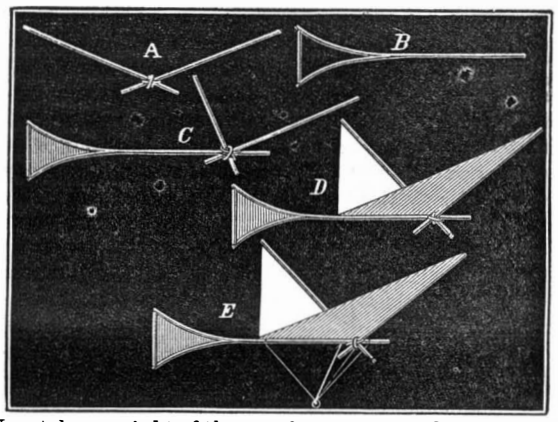
The engraving shows a swing intended for the amusement of children and as a substitute for the cradle. It is a car attached by two parallel pivoted bars on each side to the top pieces of an upright frame. This arrangement gives an easy

motion to the car and preserves it in a horizontal position in every part of its course, rendering the exercise of swinging one of positive pleasure without the danger of vertigo or any other uncomfortable sensation. The sides of the car are sufficiently high to prevent the danger of falling out, and it can be made to seat two or more children or adults. As the suspension bars are rigid, the sickening sensation from the swaying motion which is inseparable from a rope swing is avoided. Used as a cradle the child is not tossed about, but is kept in a quiet condition. When the swing is set in motion it retains its momentum for some time, avoiding the constant labor attendant in the use of the cradle.

Patented through the Scientific American Patent Agency, March 31, 1868. Address Samuel E. Martin or Samuel Swank, Shamokin, Pa.

A Flying Parachute.

There are many instances in veritable history where a scientific toy has developed into a valuable aid to mechanical progress. A correspondent from California sends us a communication in which he advances the same idea, illustrated by sketches which we reproduce. He says: "Having followed the sea a number of years, I have noted with much interest, the progress of sea birds through the air, and wondered whether man had not as good a right in the aerial kingdom as birds, who seem to possess it alone. As the subject of aerial traveling seems to have aroused some attention in Europe I have made bold to give my idea of a contrivance for supporting a weight in the atmosphere. Try this experiment; get three small sticks half the size of a penholder and about eighteen inches long; take two of them and tie them crosswise, as at A, then a third one, splitting it at one end and inserting between the open ends, a short stick, as at B. Then tie the whole or unsplitted end to the two crossed pieces, C, to form a frame for the wings and tail. The body and tail with pieces of paper pasted on the sticks will make the artificial bird, D.

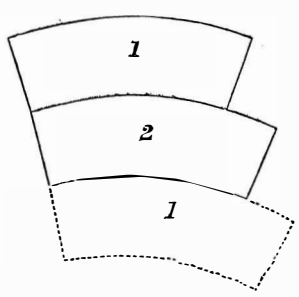


Now take a weight of three or four ounces and suspend it, as shown at E, and your flyer is complete. Two of the strings should be attached to the wings, each about six inches from the intersection of the wing sticks with the body or straight stick; the other two to be attached to the straight or horizontal stick. Try the apparatus in a room until you have the right relation between the weight and the bird; then send it out of an upper window."

[We have not tested this toy, but offer this description for the benefit of our young readers. Perhaps it may be of more consequence than a mere amusement in leisure hours.—Eds.

Another Optical Illusion.

We give, for the amusement of our readers, a little diagram to show how easily the eye may be deceived as to absolute size by a comparison of similar objects. The segments of circles in the diagram are really of one and the same size; but, arranged as they are in the engraving, they do not appear so; certainly, the lower 1 looks longer than 2, and much longer than the upper 1. This may be proved by drawing two concentric circles on paper and dividing them by equal spaced radii, so that each segment shall be of the same size, and then, cutting the segments out and placing them as in the diagram, they will appear to be of unequal size, but placed one on the top of the other, they show equally on every edge. Wheelwrights understand this, as by placing fellies—the segments of the wheel rim—in different relative positions, this illusion is perfect, and also its solution. The whole difficulty, which prevents us from judging properly of the relative sizes of the segments, lies in their arrangement. In the diagram, one side, forming one of the radii of the circle, is in line, each of the segment ends being accurately joined; the others present their longer sweep to the shorter circle of the next, and this confuses the eye, which is insensibly attracted to these divergent ends.



Bleaching Cotton Seed Oil.—W. R. Fee, of Cincinnati, Ohio, sends us the following recipe: Use one gallon of English caustic soda, in a solution of about forty degrees of strength, to about twenty gallons of crude oil. The oil, previous to being mixed with the solution, must be heated to about 90°. Stir constantly while adding the cold solution. If the oil is not now sufficiently light, add more of the solution to bring it to a light yellow or straw color.

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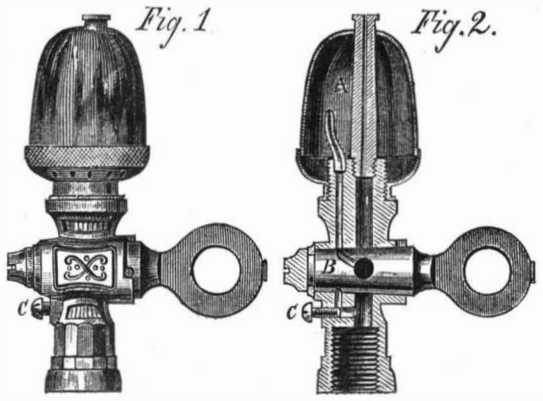
LOCKE'S SELF-LIGHTING GAS BURNER.

Matches are a great convenience, but their use is more or less troublesome and dangerous. Many,when they have used a match, throw it, while lighted, on the floor or anywhere, by which carelessness, undoubtedly, many fires are caused. In lighting gas jets, a match must be used on every occasion, or a taper must be employed, entailing danger in one case, and trouble and cost in the other. The lighting of gas by electricity is convenient only in halls or other large rooms where it is desirable to light many burners at the same time. All these annoyances are avoided by the simple device shown in the accompanying engraving.

Fig. 1 is a perspective view, and Fig. 2 a vertical central section. The burner can be attached to any gas pipe in place of the nipple generally used. Its peculiarity consists in having a supplementary miniature pipe, A, Fig. 2, by the side of the main nipple. This receives its supply of gas from a channel, seen at B, cut from the main supply aperture in the cock spirally and partially around its circumference. A screw, C, passes through the side of the burner under the cock and serves to regulate the amount of gas admitted to the channel, thus regulating the flow of gas according to the pressure.



When the gas is turned on to the main burner, the supply to the secondary burner is entirely cut off; but when shut off from the primary or principal burner, a small portion escapes through the auxiliary, being lighted in the instant of turning off by the flame from the main burner, in consequence of the rapid spiral of the channel cut in the circumference of the cock, which is simply a "fast" screw thread. In lighting, the jet of gas from the auxiliary tube, when the cock is turned, "jumps up" and ignites the gas from the main tube. The small tube, of course, burns gas when the main tube is not acting, but the amount thus burned is slight and proves to be far less expensive than the use of matches and other appliances for lighting gas. A cowl or cap, as seen in the engraving, protects the small jet from being extinguished by currents of air.

Patented April 7, 1868, by Richard B. Locke. Communications should be addressed to R. B. Locke, Secretary of the Self-Lighting Gas-Burner Company, at 451 Broadway, New York city.

PICTORIAL PRINTING.

In the new volume of the *Annual of Scientific Discovery* reference is made to, and an illustration is given, of an invention brought out during last year, designed for producing pictorial effects by the use of movable metal types, cast like ordinary printing types and bearing upon their faces different devices, which, by their combination, produce the desired effect. A full-page illustration, printed on landscape type, and representing the home of the Adams' at Quincy, Mass., is given as evidence of what is possible to be accomplished by this invention. The type used are each one thirty-second inch square, their surfaces either plain, blank, or lined in various directions and degrees of fineness. The two edifices, with doors, windows, chimneys, columns, and roofs,are represented in the cut before us in accurate prospective, and even the trees, foliage,clouds,and other accessories of the landscape are portrayed with a considerable degree of fidelity. The general picture presents the familiar appearance of the patterns for canvas needlework; every straight line appears as such, but the curved outlines approximate to that form by rectangular gradations.

This plan is a Boston invention, and is not yet even fully developed; but even when perfected, it is doubtful if pictures thus printed will ever equal in beauty those produced by a process, similar in principle, to the foregoing, and, like that, first made public during the past year. The latter invention is due to one Fasol, a printer in Vienna, and the art, as practiced by him, is called "Stigmatypy," from the fact that he uses only the full point, of different sizes, cast upon the same body. The variations in shade, and the whole effect is produced, as in ordinary stipple engraving, according to the proximity of the points. Both processes are yet in their infancy, and we await with interest their further development.

EFFECT OF FROST ON LARVÆ.—In a paper addressed to the French Academy, M. Reisert announces that the general belief held by farmers, that a severe frost kills noxious insects and larvæ that grub in the earth, is a fallacy, the only effect of the frost being to drive them still deeper into the earth. He found that while the thermometer stood at 5° Fah., and the ground was covered with snow, the soil at a depth of twenty inches was not influenced by frost, and below this line the larvæ were to be found; descending still further as the cold increases.

THE CONSTRUCTION OF WATCHES.

BY H. F. PIAGET.

No. 2.

A clock has a combination of wheels to mark the number of oscillations made by the pendulum. A watch is a similar combination to mark the number of vibrations made by a balance. The wheels of a clock may be impelled by a weight, and the time measured by a pendulum; but as the watch must go in all positions, neither the weight nor the pendulum can be applied to it.

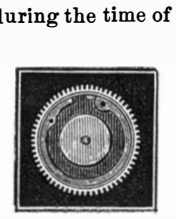
The power of motion in a watch is produced by means of a spiral spring, usually called the main spring, placed in adrum or barrel, which when wound round a center will from its elasticity cause the barrel to make as many revolutions as there are turns made by the spring. Time is measured in a watch by the vibrations of a balance, which if moving in equal space, will make all the vibrations in equal time.

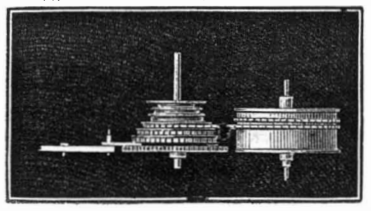
Main Spring.

The escapement is the name given to that part of the watch which transmits the power from the wheels to keep up the vibrations of the balance; the escapement also prevents acceleration of the wheels, by holding them in check until the balance has completed its vibration. If the force exerted by the unfolding of the spring be equally transferred through the wheels to the escapement, and if the impulse given by the escapement to keep up the vibration of the balance be equal, then will the motion of the balance be also regular, and the watch will measure equal time. But the force of the spring is unequal—it is strongest when fully wound, and becomes weaker as it uncoils. To compensate this inequality, a cone is employed with a spiral groove, called a fuzee, to which is attached the first wheel.

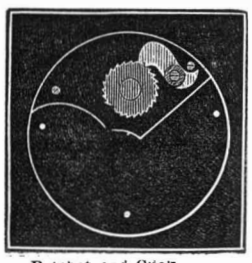
The wheels of a watch are thus called:—The wheel on the fuzee is the first wheel; the center wheel, the pinion of which carries the minute hand; the second, or center, the one which in ordinary watches carries the second hand; the fourth, and the next, the escape wheel. In the old rack-lever watches there is one wheel less, the second hand being carried on the pinion of the escape wheel; the second hand then went around very fast, but these kind of watches are nearly out of use, many of them having been altered to the present lever escapement.

The going fuzee, invented by Harrison, to make a watch continue to go while being wound up, and used in all good English watches, has an auxiliary spring, through which the force of the main spring is carried to the wheels. While the watch is being wound, a ratchet and click prevent the reaction of the auxiliary spring, which therefore continues to act during the time of winding, although the power of the main spring is then taken off. The fuzee is connected with the barrel containing the spring, by a chain with hooks at each end. In winding the watch the chain is wound off the barrel and around the fuzee. When the watch is fully wound, the spring is at its greatest power, but the chain being then around the smallest part of the cone of the fuzee, the influence of the spring is the smallest.


Auxiliary Spring.

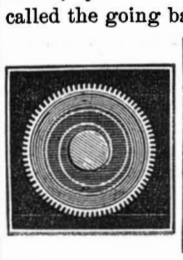

Maintaining Power, Clock and Spring. Barrel, Fuzee, and Chain.

As the watch goes down the power of the spring relaxes, but as the cone enlarges its influence increases, and when the spring is down, the chain is upon the base of the cone, where the influence of the spring is the greatest. Upon the shape of the cone of the fuzee, therefore, depends the quality of the maintaining power. There is usually about half a turn of the weakest part of the spring left without action to enable it to draw all the chain to the end, otherwise the watch would not run quite down; that is regulated by a click and ratchet upon the barrel arbor.

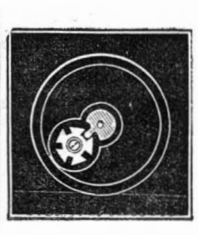

Ratchet and Click.

In some watches the ratchet and click are placed under the dial, and cannot be seen by the wearer; in others they are placed on the bar that holds the barrel, and are easily seen on opening the watch.

The fuzee, or cone, can not be introduced into very flat watches. The barrel, therefore, instead of the fuzee, is attached to the first wheel, by the barrel having teeth cut at the sides, and is called the going barrel.


Going Barrel.

English Stop Work.


Swiss Stop Work.

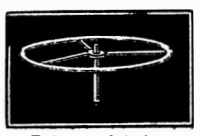
Stop works are necessary to every watch, particularly to those with chains, as to those without the chain would be almost sure to break, particularly in thick English watches. In Swiss watches, and in all with going barrels, or without a chain, they are indispensable (to a good watch), as by them the spring is regulated as near as possible in its action; not to be too strong when fully wound, nor too weak when nearly run down. A watch without stop works, or one with imperfect ones, will be in danger of having the spring or some of the teeth of the barrel broken in winding.

If the spring is wound up too tight it is much more liable to break, and when broken, if there are no stop works, the strain of the key comes on the teeth of the barrel, and if forced will frequently bend or break them. If the spring to a going barrel be well made, and the wheels so constructed that only the middle turns of the spring are required to be in action, and not those turns of the spring in which it is at its greatest or least power, the force may be sufficiently equal for ordinary purposes; but where the fuzee can be applied it is preferable and certainly the best.

The power of the spring is conveyed to the escapement through the wheels, and the arrangement is nearly the same in all watches; therefore their comparative value in this part of the construction depends entirely upon the skill of the workman and the quality of the materials. The power of the spring being equal, and the wheels and pinions properly constructed and placed correctly to act with each other, which is called "pitching the depths" (this is a term used in wheel work, and it is necessary that the wheels and pinions be placed at proper distances from each other, or there is friction, cutting, and noise in the action, which should not be in a good watch), to convey the power to the escapement, and to keep up the vibration of the balance, constitutes the essential difference between one watch and another.

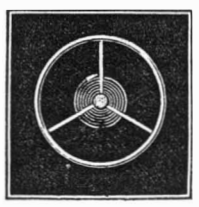
A watch is described by the form of its escapements.

Several escapements, such as the verge, the vergule, the rack lever, etc., had to be abandoned. My uncle, who was one of the most ingenious workmen in Switzerland and London, and maker of musical watches and repeaters of every kind, and with whom I worked fifteen years, spent upward of five years in inventing and trying new escapements, but had to abandon the idea of making anything better. It was his opinion, and is also mine, from experience, that it will not be possible to get escapements with less friction, and that will maintain their accuracy better than the chronometer, duplex, or even lever, if properly made. Still I may be mistaken, as many things have been achieved within a quarter of a centurywhich would then have been thought fabulous.


Balance of Axis.

The balance of a watch is a wheel nicely poised upon its axis, having its greatest weight at its periphery.

A balance properly placed, with its pivots in their holes,but resting on the points or ends, would, when put in motion, revolve on its axis; but if a spring so constructed as to bend in either direction in which the balance will turn, was to have one of its ends fastened to a point independent of the balance, while the other end was attached near to its axis, an impulse then given to the balance would only cause it to move as far as the force given was able to overcome the resistance of the spring, when the resistance becomes equal to the impulse given; the balance stops for an instant, and then is driven back by the elasticity of the spring to a distance nearly double to that through which it passed in its first motion, and thus continues to vibrate until the friction and the resistence of the air bring it to rest.

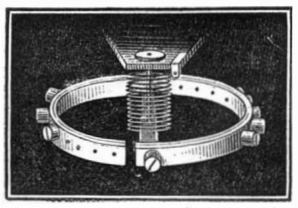

Balance and Hair Spring.

A spring thus applied is called the balance or hair spring. This spring has been frequently noticed as illustrating the great value a small piece of steel may acquire from manual labor; it is perhaps more remarkable for its extreme delicacy, four thousand of them weighing scarcely more than an ounce, while the cost frequently exceeds four thousand dollars whenused for fine work.

When the balance is at rest the spring is inclined neither way, this position is called the point of rest; and the motion of the balance when influenced by the hair spring, is called vibration.

The application of the balance or hair spring is the greatest improvement ever made in a watch; since it rendered a comparatively useless machine capable of going with accuracy; and now that the principle can be more easily applied, although perhaps not better understood, it offers the means of measuring time equal to a pendulum.

The first watches were made without any balance spring, but with a vertical wheel which moved the wheel backward and forward; and instead of the chain now used, there was only a piece of cord, like a very fine violin string, to convey the motive power of the main spring to the wheels. This balance spring can produce astonishingly varied effects, from difference in the length and tapering, the principle being, the stronger and shorter the spring, the quicker will be the vibrations.


Marine Chronometer Balance and Spherical Spring.

The hair springs of watches are made flat on account of the small space for them to work in; but where there is room,the isochronal spring is applied. In marine chronometers for the use of ships, they are made in a spherical form; the thickness of the spring being the same the whole of its length instead of tapering, as they are easier of execution and better adapted for the regulation of time.

These remarks will not be thought too detailed if we consider that the correctness of the watch as a measurer of time

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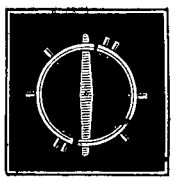
is mostly dependent on the correct principle of the escapement and of the hair spring.

The curb, or regulator, is the part used for regulating the watch. The purpose is to shorten or limit the motion of the balance to make the watch go faster, and to lengthen it to make the watch go slower.

When a good watch has been produced, with the main spring acting with equal power from the instant of being fully wound to the termination of its time of going, the wheels and pinions perfect in all their parts, the escapement on a good principle and properly executed, and the balance spring so perfect as to make all its vibrations in equal time, even then the watch will vary in the time. It will show a variation upon every change of temperature, unless it be compensatory.

A watch may be said to be a metallic thermometer, for the slightest change in the temperature affects its going in proportion to the change; heat enlarging the balance and lengthening the hair spring, (independently of the effect produced upon all the other parts,) which will make a watch lose, while contraction from cold will make it gain. An action upon the balance, bringing the weight at its extremity nearer to the center, will cause it to gain, and the same effect will be produced by an action on the hair spring, which will either shorten its length or limit its motion; and both of these means are made use of to make watches keep equal time in different degrees of temperature.

When this effect is produced it is called compensation, and is obtained from the different degrees of expansion in metals, and for this purpose the compensating balance is applied to good watches. The compensation balance has its circumference composed of two metals, brass at the extremity and steel within; and as the rim is cut in two parts will expand or contract with every change of temperature. When heat causes the expansion of the spring and balance, it also cuts on the brass at the extremity, and causes that part of the rim which is cut, to be brought nearer the center, and this motion is so regulated by means of screws or weights, as to compensate for the expansion, and enable the watch to measure equal time under the different degrees of heat and cold.



Compensation Balance.

But compensation balances should not be used unless the other parts of the watch are perfect, otherwise they are not so good as the plain gold or steel round rim balance. I have always found the latter kinds to keep very good time, and where the price is limited, are to be preferred, as a bad compensation balance is but a detriment to an otherwise good watch. The compensation curb is frequently applied to watches. Its use is to limit or extend the motion of the balance spring, by a self moving action caused by a change of temperature. The principle is the same as in a compensation balance, the motion being produced by the inequality of expansion in the two metals, (brass and steel,) of which it is made.

There are many who expect an accuracy incompatible with the nature of the machine; indeed, positive accuracy can never be obtained, until an unchangeable material is discovered, of which the work can be constructed.

One of the best time keepers and finely finished watches that I ever saw, was one made in Geneva, or Locle, which a friend of mine purchased in California, and I had it to clean. It had the plates and bars for the wheels made of nickle, the wheels were made of gold, it had a compensation balance, with isochronal hair spring; in short it was a *chef d'œuvre* (for a Swiss watch,) with an anchor escapement.

It is frequently forgotten that time differs in every spot east or west of the place at which the watch is set. At the present speed on railroads, two hours' traveling may make the traveller's watch show some two or three minutes faster or slower, than the local time of the place at which he arrives. In this case, the difference must be added or subtracted to avoid disappointment when travelling. It has been said "that no man ever made a true circle or a straight line except by chance," and the same may be said of any machine which measures time exactly. These remarks neither lessen the perfection or usefulness of watches. They are among the highest specimens of human ingenuity, and indispensable in the present state of society.

MANUFACTURING MINING, AND RAILROAD ITEMS.

At Denver, Col., a company has been organized to build a train-road into the mountains of South Pass, as a means for bringing into the city lumber and all kinds of building material. The plan of construction is as follows: The ties are designed to be seven feet long, round timber; the rail 8x8 wide, sawed spruce timber, 16½ feet long, let into the ties and securely keyed: track four feet wide; car wheels 18 inches in diameter, 4 inch tread, with square flange. These rails can be turned and used eight times, or can be strapped with iron when desired by the company. Small but powerful locomotives are to furnish the motive power. The estimated cost per mile is $1,738.

English capitalists of a speculative disposition are turning their attention to the oil resources of Northern Italy. This country has been known for ages to be rich in petroleum of peculiar qualities and of a natural transparency. In Barigazzo the oil appears on the surface of small pools of water, and throughout the whole of the hills of the northern sections there are unmistakable geological signs of the existence of petroleum deposits. There are oil wells at Monte Bonello which have produced eleven tuns of oil per day, and this at a depth of less than 160 feet. The Italians seem entirely apathetic about developing the oil resources, but the introduction of English capital and American machinery will make petroleum one of the most profitable of Italian industries.

The boot and shoe business of Detroit last year was very prosperous, the aggregate sales of twenty large manufacturers amounted to nearly $6,000,00. One of the most extensive firms sold $2,000,000 worth of goods.

A special freight train was recently started from Concord, N. H., for Salt Lake City, a distance of 2,600 miles. It consisted of twenty cars loaded with stages for the overland line to California.

According to the *Athenæum*, Mr. Galy Cazalat has invented a process to be employed in casting steel, so that tilting is rendered unnecessary. The mold is made of the greatest possible strength, and is provided in its upper part with a chamber in which a quantity of an inflammable powder is placed. When this powder is ignited an immense pressure is exerted upon the surface of the steel, the molten metal is thereby forced into every minute portion of the casting, expels the gases contained in the steel, and causes the metallic particles to be brought into the most intimate union.

In the foundery of the Port Richmond Iron Works, of Philadelphia, are three cupola furnaces, the largest of which will melt twelve tuns of iron per hour. In the machine shop of the same establishment there is a planing machine capable of planing casting eight feet wide, six feet high, and thirty-two feet long; a lathe that will swing six feet long, and turn a length of thirty-four feet; and a boring mill, believed to be the largest in America or Europe, that will bore a cylinder sixteen feet in diameter and eighteen feet long.

The American Central railway, a projected air line road from New York to Omaha, has, we learn, finally assumed a definite shape, and the enterprise is to be pushed through as fast as money in abundance can do it. The entire air line will be made by a consolidation of the Allentown road to Harrisburgh, the Pennsylvania Central to Pittsburgh, the Fort Wayne and Chicago to Fort Wayne, and the American Central to Omaha. The company was fully organized at Fort Wayne, Indiana, on the 5th inst., and the road will be one of the most important now building in the United States. Its length is to be five hundred and eighty-five miles, and by its directness will shorten the route now traversed between this city and Omaha by one hundred and thirty-six miles. When the Pacific railway is completed this new road will constitute with it a grand trunk line from ocean to ocean.

The New York State Legislature, after a protracted consideration, have passed two bills securing two underground railways for the relief of this city. The first bill provides for the construction within three years of a tunnel railroad from the City Hall to Forty-second street, a distance of a little over three miles. The list of incorporators of this road embraces the names of many of the most responsible capitalists of the city, and the required deposit of $300,000, will serve as a pledge that the enterprise will be carried through. Two additional years are allowed to carry the railway to Harlem river, and provision is made for an elevated line in case the lowness of the surface above Ninety second street renders the construction of a tunnel impossible. The other bill passed was for the Arcade railroad, described and fully illustrated on pages 92 and 93, Vol. XVI., SCIENTIFIC AMERICAN.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

WOOD-PLANING MACHINE.—Frank Douglas, Norwich, Conn.—The object of this invention is to provide means for rendering the feed rolls more perfectly self-adjustable to planks, boards, etc., of different thicknesses. In accomplishing this object, the upper rolls are supported in a novel manner, and a new kind of adjustable gear is employed to operate them. A new arrangement is also used for applying adjusting weights to the upper rolls.

CARRIAGE COUPLING.—Ira and John S. Vanpelt, Petersburgh, Va.—In this invention the use of coupling bars is dispensed with, and a carriage is made without them, which is simpler in construction, stronger, and works better, than the carriages in which such bars are employed.

SHINGLE MACHINE.—Albert Thompson, Ridgeway, Pa.—In this invention the carriages are attached by a new device, by means of which one of them can be detached and stopped for adjusting the bolt without interfering with the action of the other. The heading and pointing is also regulated by a new mechanical arrangement, and a new apparatus is employed for adjusting the speed of the carriages.

GIG SAW.—J. W. Moyer, Cherry Valley, N. Y.—This invention consists in providing the saw frame with two springs, one above and one below the saw, which operate together to give it the necessary tension, and which counteract each others' effect upon the motion of the saw, rendering its working even and uniform, and enabling it to be operated with any degree of speed.

CARTRIDGE BOX.—John Elbertson, Kirksvill, Mo.—In this invention, the cartridges are arranged in a circular disk, which is hung at its center upon a spindle in a circular case. The latter is provided with a door at its lower edge, by which its cartridges are taken out. The disk carries the percussion caps, also, which are taken out through a port in the upper side of the case. The disk and case are so constructed and arranged that the cartridges and caps will always present themselves at the proper place to be handled.

DOOR STOP.—A. G. Stevens, Hillsboro', N. H.—The object of the door stop embraced in the present invention is to obviate any injury to the sides of rooms by the striking of the door against the same when opening wide, and for this purpose this invention is a newly constructed and arranged stop applied to the door, which, by the opening of the door, will be thrown into position to prevent its striking against the side of the room and thus obviate any injury thereto.

WATCH.—Charles S. Moseley, Elgin, Ill.—This invention relates to the manner of securing or holding the outer end of the hair or balance spring to the watch movement, and it contists in the construction of a stud carrying hair spring, of an arm or extension piece to the bridge plate for the balance wheel, and of a set screw or screws, whereby the adjustment and attachment of the hair spring can be secured with accuracy and it can be always brought to the same position.

RAILROAD SWITCH.—Adolph F. Ballas, Pottstown, Pa.—The many accidents which occur through the switches now in use have led to the invention by me of a switch that in itself will be sufficient to guard against accidents, however careless or neglectful the switchman may be, and by the present invention such a switch is obtained, the principle of the switch consisting in arranging in such a manner as to be self acting through a counter weight suitably applied therero.

ANTI-FRICTION JOURNAL BOX.—Patrick S. Devlan, Hudson City, N. J.—This invention has for its object to furnish an improved anti-friction material for journal boxes so that the said anti-friction material or part of the journal box may be conveniently replaced when worn by fresh material.

CORN PLANTER.—D. A. Kershner, Elliottstown, Ill.—This invention has for its object to furnish an improved corn planter which shall be so constructed, and arranged as to drop the corn, cover it and mark the place in which the corn is planted so that the corn may be conveniently planted in check row

SAUSAGE MEAT CHOPPER.—Charles Welte, Frankford, Pa.—This invention has for its object to furnish an improved machine for cutting or chopping sausage meat which shall be simple in construction, easily operated, and effective in operation.

HARROW.—John Rankin, Taunton, Mass.—This invention has for its object to furnish an improved harrow, simple in construction, easily operated, and effective in operation, and which will do its work better and more thoroughly than the harrows now in general use.

SPOOL STAND.—Nicholas P. Clarke, Central Falls, R. I.—This invention relates to a combination of a revolving spool stand, needle case, and thread cutter, whereby needles may be threaded directly from the spools on the stand and the thread cut of any desired length.

STEAM VALVE.—William Wilson, Galesburg, Ill.—This invention relates to a method of constructing the slide valve of steam engines, whereby double openings are given both at steam and exhaust ports.

BEEHIVE.—James Wash, Mt. Stirling, Ill.—This invention relates to improvements in beehives, the object of which is to provide a hive that shall effectually prevent millers, moth and other insects from entering the same, and at the same time provide a hive having good ventilation, and which is easy of access to remove the boxes of honey.

BUCKLE.—John A. Mashmeyer, Beardstown, Ill.—This invention relates to a buckle designed more especially for harnesses but capable of very general application. The object of the invention is to obtain a buckle which will admit of the parts it connects being readily attached together and detached and also readily taken up and let out, and one which will not abraid or injure the parts connected by it in any way whatever.

COMBINATION TOOL.—James Swan, Seymour, Conn.—This invention relates to a combination tool, whereby two tools such, for instance as a screw driver and a gimlet, brad awl, corkscrew, or other similar tools may be combined. The invention is an improvement or a further carrying out of the principle on which the pocket or portable corkscrew is made.

WHIFFLETREE HOOK.—Francis W. Beckwith, Westmoreland, N. Y.—This invention consists of the combination of the thimble and spring tongue for obtaining a more safe and convenient hook for whiffletrees.

PEN AND PENCIL CASE.—Wm. Maginn, New York city.—This invention consists in the employment of a cylinder of whalebone between the metal ends of a pencil case, whereby it serves to inclose the metal barrel containing the mechanism for protruding the lead holder; and simulates the appearance of the hard rubber heretofore used.

CONCRETE BLOCK PRESS.—J. H. Wirt, Delphi, Ind.—This invention relates to the pressing of concrete blocks for building purposes. It consists of a simple and effective arrangement of levers and toggle joints for actuating the press block together with other devices perfecting the whole.

FRUIT CRATE.—Truman Mabbett, Vineland, N. J.—The nature of this invention relates to the packing of fruit for transportation and consists of a crate composed of slats with spaces between each slat, the said crate also containing an inner or lining crate together with a spring bottom.

FENCE POST.—P. McDuff, Weston, Mo.—This invention relates to an improvement in fences and consists of an upright plank secured to a bottom cross piece and brace and having the horizontal planks composing the fence panels nailed to the upright plank.

LIFTING JACK.—G. H. Alger, Ames, N. Y.—This invention is an improvement on the lifting jacks as heretofore made and is designed more particularly for lifting thrashing machines when the rear wheels of the same are to be withdrawn to lower the rear of the machine to the ground for the operation of thrashing.

RUDDER GEAR.—C. T. Rideout, Boothbay Harbor, Me.—The nature of this invention consists in the employment of a traversing segment having teeth which engage with the teeth of a disk keyed to the rudder head, whereby the tiller can be made shorter and take up less room in its travel across the deck, together with a device for securing the rudder in any desired position.

SCAFFOLD BRACKET.—Samuel D. Van Felt, Anderson, Ind.—The object of this invention is to provide a firm point of attachment on the roofs of buildings for the scaffolds used in shingling or repairing the same. It consists of devices for clawing into the shingles of the roof and supporting the plank or scantling of a scaffold.

TOBACCO SMOKING PIPE.—Henry R. Robbins, Baltimore, Md.—In this invention the pipe, which is so small that it can readily be carried in the pocket, is provided with an improved apparatus for passing the smoke through water, and for preventing the water from escaping into the stem or the bowl, and is so constructed that it can be readily taken apart for cleansing it.

TOBACCO HAND TYING MACHINE.—David C. Delinger, Russellville, Ohio.—This invention is a simple, cheap, and easily operated machine for tying rolls or hands of tobacco, whereby the operation is greatly facilitated.

RAILROAD SILL AND CHAIR.—Jasper Snell, Pottsville, Pa.—This invention relates to an improved railroad sill and chair.

KNIFE FOR REMOVING HIDES AND SKINS.—S. J. Patterson, Bridgeport, Conn. This invention has for its object to furnish an improved knife, designed especially for butchers' use in removing the hides and skins of animals, which shall be so constructed and arranged as to guard against injuring the skins and hides by cutting them during the process of removing them from the animals.

WASHING MACHINE.—Milton F. Wickersham and Elisha Roush, Springfield Ill.—This invention has for its object to furnish an improved washing machine, simple and durable in construction, which will not wear the clothes and which will be easily operated.

SCOURING AND CLEANING INSTRUMENT.—V. A. Hacker, Knoxville, Tenn This invention has for its object to furnish an improved instrument for use in cleaning and scouring floors stairs, ceilings, windows, etc., which shall be simple in construction, convenient in use, and effective in operation.

HOE.—G. H. Owens, Maysville. Ky.—This invention relates to a method of fastening a hoe to the handle, whereby it is made much more useful and durable than hoes made in the ordinary manner, and the invention consists in securing the hoe to the handle by a tapering ferrule.

VENTILATOR FOR HATS.—George Deas, New York City.—This invention relates to a device which is applicable to all kinds of hats, and consists in attaching to the inside of the hat elastic and adjustable bands, or rings, formed of vulcanized rubber, or other suitable material.

TIGHTENING WAGON TIRES.—S. W. Corbin, Vallonia Springs, N. Y.—This invention relates to a method of setting or tightening the tires of wagon wheels, when they have become loosened by use, or from any other cause.

VENTILATOR.—W. O. Crawford, North Star, Pa.—This invention consists in confining within a case or cabinet of suitable size, one or more air bellows, which may be operated by clock work, propelled by a spring or by a weight, the said clock work or gearing being placed within the case.

SICKLE DRIVING APPARATUS.—George G. Lyman, Independence, Iowa.—This invention relates to an improved mechanism for driving the sickles of reaping and mowing machines, and indian corn harvesters.

FASTENING FOR FURNACE DOORS.—P. E. Shear, Saugerties, N. Y.—This invention relates to a fastening for furnace doors, whereby doors for this purpose may be tightly secured in a closed state and very readily opened. The invention in the present instance is applied to a door fitted in a mouth-plate provided with water passages to admit of a current of water passing through to obviate the rapid burning out of the door and mouth-piece; but the invention is applicable to doors fitted in the ordinary frame or mouth-piece.

BEEHIVE.—A. F. Cobb, Chapel Hill, Mo.—This invention consists in constructing a beehive of metal, and coating the same internally with plaster of Paris and beeswax, whereby the ravages of the moth, so destructive to bees, are fully guarded against, and at the same time a very economical and durable hive obtained, and one which may be kept well ventilated at an even temperature, or warm in winter and cool in summer.

MACHINERY FOR AUGERS AND BITS.—James Swan, Seymour, Conn.—This invention relates to a machine for upsetting the lips of curved or gouge-lip augers and bits.

INDEXING BOOKS, LEDGERS, ETC.—James H. Swindell, Camden, N. J.—This inventon relates to a method of indexing books, ledgers, etc., so that with two or three turns any desired page can at once be found. The invention consists in subdividing by means of notches such pages which are found by means of the ordinary notches that indicate the capital letters, or the hundreds or thousands, as the case may be.

CORN PLANTER.—Aaron Armstrong, Gillespie, Ill.—This invention relates to a corn planter of that class which is mounted on wheels, and on which the driver rides. The invention relates to a new and improved mode of raising the furrow shares out of the ground, and in an improved mechanism for operating the seed distributing device.

STAVE JOINTER.—Hiram S. Wiley, Madison, Ind.—This invention consists, 1st, In the arrangement of a movable circular saw for jointing staves, which traverses in a downward curve, corresponding with and conforming to the curve in the stave. The guides which conduct the saw forward and backward are true arcs of circles and concentric with the driving pulley over head, so that the belt is always kept tight at any part of the travel of the saw frame along its guides. 2d, In a slight lateral curve given in the said guides, whereby a light uniform curve is left in the edge of the stave, which adapts it more readily to the bilge requisite in a cask or barrel. 3d, The arrangement of the curved guides, toothed racks, and the connections for producing the forward and backward movement of the saw frame and saw.

EXHAUST FOR MILLSTONES.—David Baird, Bloody Run, Pa.—The present invention is an improvement upon the apparatus for which a patent was granted to the same inventor Dec. 2, 1867. The improvement consists in providing means for saving any dust or fine flour which may occasionally be taken up by the exhaust, and for carrying off the condensed steam and moisture.

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GATE.—John J. Pellett, Oconomowoc, Wis.—This invention relates to the class of farm gates which are expanded and contracted longitudinally in order to close or open them, by means of the device known as "Jacob's ladder," and consists in inclosing said ladder between the bars of a sliding frame, by which the gate is greatly strengthened and at the same time rendered more beautiful in appearance.

FEATHER RENOVATOR.—James C. Moorehead and Wm. W. Elliott, New Madrid, Mo.—In this invention two boilers are employed, one containing pure water and the other containing certain chemicals in solution. The steam from these boilers is carried in separate pipes to the cylinder where the jets are united and discharged among the feathers. The latter are beaten and shaken while under the action of the steam, until thoroughly cleansed.

OYSTER WINDER.—Samuel S. Shaw, Newport N. J.—This invention relates to a device to be used on boats for winding up oyster dredges, and the object is to prevent the reversing of the crank shaft in case the dredge strikes against a rock or some other obstruction.

EGG CUP.—C. D. P. Watters, New York city.—This invention relates to a device the object of which is to facilitate the taking up of boiled eggs from the plate and to hold the same in a convenient position, to allow their being partly peeled and their subsequent removal from the shell.

RAILROAD TICKET HOLDER.—Smith M. Brown and Harvey J. Brown, Holly, Mich.—This invention relates to a device for holding railroad tickets, and consists chiefly of a sheet metal plate, having turned inside and bottom edges, whereby flanges are formed between which and the body of the plate a ticket can conveniently be held.

SAW SET.—Jacob Noepel, Newark, N.J.—This invention consists in the use of a rotary punch, whereby the device can be applied to different sized and shaped saw teeth, and in the construction and arrangement of the jaws and handles, whereby the saw blade is caused to remain stationary on the lower jaw.

BRICK MACHINE.—John H. Smith and Charles H. Florence, Richview, Ill.—This invention has for its object to furnish an improved machine for molding brick, which shall be simple in construction, easily operated, and conveniently moved from one part of the yard to another.

EGG BEATER.—Wm. N. Angus, Morristown, N. J.—This invention relates to an improvement in machines for beating up eggs for various culinary purposes, which machines or beaters are operated by hand.

LAMP BURNER.—John R. Ackerman, Edward B. Campbell, and Niram O. Golden, Dobbs Ferry, N. Y.—This invention consists in the application and arrangement of a double cone or cone and cylinder, which surround the wick tube of the lamp, whereby the flame is supplied with atmospheric air or oxygen in sufficient quantity to produce perfect combustion and prevent smoking, without the use of a chimney.

METALLIC HEATING BASE AND MOLDING.—Chas. E. Finkle, New York city.—This invention relates to the construction and improvement of dwelling houses and public buildings, and to the facilities for heating or warming the same.

WASHING MACHINE.—George Hood and John D. Kelly, Providence, R. I.—This invention relates to a washing machine of that class in which the articles to be washed are manipulated between corrugated rollers, and the invention consists in the general arrangement of the machine, in which below a revolving corrugated drum, a frame carrying a series of horizontal corrugated rollers is arranged, the frame being held up against the drum by means of springs.

BOTTLE STOPPER.—S. and S. Cary, New York city.—This invention relates to a new mode of strengthening and protecting cork bottle stoppers, and consists in the use of a cap made of metal foil fitted around and over the upper part of the cork. The cork is thereby not only made air tight, so as to form an air-tight stopper for the bottle, but it is also made stronger and not so liable to crumble. The metal foil increases the diameter of the stopper so little that it will fit easily into the mouth of the bottle, if it did fit without the cap.

STRIKING ATTACHMENT TO CLOCKS.—N. E. Mulford, Madison, N. Y.—This invention relates to a new arrangement for operating the striking part of a clock, and consists chiefly in the arrangement of a heart shaped cam mounted on the spindle of the hour wheel, and in the arrangement of seven pins on face of the hammer wheel, said pins being arranged in a spiral line around the center of the hammer wheel.

PURIFYING AND DECOMPOSING OILS, FATS, ETC.—Richard C. Barton, Brooklyn, N. Y.—This invention relates to a new process for purifying oils and fats and for separating gelatine matter from fish and other oils, and consists more particularly in the use of ferment or protein, which, when added in the necessary proportions to an oil or fat, and when raised in the same to a certain required temperature, will extract from it all impurities.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however when paid for as advertisemets at $1 00 a line, under the head of "Business and Personal."

☞ *All reference to back numbers should be by volume and page.*

Mt. Sterling, Ill.—A letter dated August 23d, containing $5 came from the above place. No name to the letter. Who sent it, and what for?

W. E. S., of Pa., has a boiler, the shell of which is 40 inches diameter and 16 feet long. He proposes to put in 35 three-inch tubes, and a steam dome on the top to make its capacity 34 H. P. He asks if the boiler, with proper grate surface, will yield that amount. In reply we will state that with 16 square feet of grate surface and the 35 tubes the boiler should give 34 H. P. We think, however, that a better draft and more perfect combustion will be obtained by reducing the length of the boiler to 12 feet.

N. C., of Tenn., E. F. O., of R. I., and W. E. C., of Conn.—The nominal horse-power of the steam engine is worthless to represent its actual power. It is a conventional term having very little significance. The indicator is the only test of engine power.

A. P., of Ky.—Tripoli is a valuable polishing powder, but seems to be of little commercial consequence, and has no established price. It is found in large quantities and of excellent quality in various parts of the country. The sample sent appears to be good.

S. H. P., of Mass.—We believe that boiled linseed oil is clarified and bleached by simmering and skimming and afterward boiling with calcined magnesia and letting it stand until the impurities subside with the magnesia. Another method is to use sulphuric acid.

J. G. P., of Pa.—The lime from tan vats may be removed by washing the surface with a dilute solution of muriatic acid.

H. W. D., of Ind.—Caustic soda and sal. soda are used to soften hard water; but hard water is one of the necessary evils of a new cement cistern.

F. A. J., of Ohio.—If you will read back numbers of the SCIENTIFIC AMERICAN you will find all our ideas in regard to rotary *vs* reciprocating engines. Once for all, we wait as anxiously as anybody for the advent of an economical rotary steam engine. We have yet to see it.

H. S., of Pa.—Aluminum bronze is not a bronze powder, as you imagine. It is a composition of metals used as brass or any other composition. Read our columns and you will see your mistake.

H. W. B., of Pa., asks if the steam in a locomotive cylinder will exert its force to as great advantage in starting a train when the crank is on the lower center as when on the upper. This question has already been extensively discussed in these columns. See back volumes.

A. P. V., of N. Y.—Lead pencils are made of graphite, the purer kinds containing from 90 to 96 per cent of carbon and from 4 to 6 per cent of iron. It is found in Sturbridge, Mass., and many other places. The material is ground fine, exhausted of air, and subjected to great pressure in the form of cakes. Sometimes pure clay is mixed with the plumbago.

E. M., of R. I.—"Do meats or vegetables cook any faster when boiled in a pot if the water boils hard than when it boils gently?" No. You cannot heat water above its boiling point. 212 degrees is all the heat you can obtain at the sea level. When the heat rises above that the water turns into steam.

F. C. C., of Pa.—"Can you inform me why brass or copper thrown into a blacksmith's forge prevents the welding of iron?" Yes. Copper and its alloys contain sulphur which is a disintegrater and destroyer of iron.

M. D. C., of Pa., says that a cement for fastening iron to stone which becomes nearly as hard as the stone itself, consists of 6 parts Portland cement; 1 part powdered lime, not slaked; 2 parts sand, and 1 part slaked lime; mixed with water to the proper consistency, the stone and iron both being previously dampened. In 48 hours it will have set firmly.

H. H. R., of N. Y.—If you wish to learn the art of locomotive engineering go into a locomotive building shop and from thence on the road as fireman. H. C. Baird, 406 Walnut street, Philadelphia, will send you a good Mechanic's Manual.

Business and Personal.

The charge for insertion under this head is one dollar a line.

$500 will be paid for a method of casting large chill rolls, which, upon trial, will be found to overcome the danger of breakage in casting. Address Lock Box 304, Pittsburgh, Pa.

Wanted—1 cotton cord machine for laying cotton or hemp twine, either 3 or 4-fold. Address, stating price, etc., Jabez Hodson & Son, Manayunk, Philadelphia, Pa.

Patent self-closing faucets—a very superior article for water closets, wash basins, sinks, and urinals. J. Zane & Co., plumbers, 81 Sudbury st., Boston, Mass.

Important!—How to exterminate midgets, or gray hen lice, in heneries—send 25 cents for recipe to G. F. Wright, Box 8, Clinton, Mass.

Wanted—terms for air pumps of various sizes for hand and machine power. Address "Air Pumps," P. O. Box 773, New York.

Henry Carey Baird, Industrial Publisher, 406 Walnut street, Philadelphia, has just published:—"A Hand Book of Practical Gaging." To which is added a Chapter on Distillation, describing the process in operation at the Custom House for ascertaining the strength of Wines. By J. B. Keene. Price $1 25 by mail, free of postage.

The Franklin Institute system of bolts and nuts, drawn full size, and sent to any address, postpaid, on receipt of two dollars, by Edward Lyman, engineer and draftsman, New Haven, Ct. Circular sent free.

A responsible man desires the agency of some staple article for the West; or would attend to any business that may be intrusted to him. Address, at once, box 776, West Meriden, Conn.

Manufacturers of combs please send address to Theodore Schreiber, box No. 522, Wheeling, W. Va

Wanted—A circular sawyer. One who thoroughly understands his business will have regular employment. He must produce testimonials from late employer as to competency. Address G. A. M., box 428, New York.

To Proprietors of boiler works.—A young man of several years' theoretical and practical experience, and still employed as a superintendent of extensive boiler works, desires a similar situation. Address A. W. R., Philadelphia Democrat office, No. 465 North 3d st., Phila., Pa.

Wanted to purchase—the necessary machinery for manufacturing parlor matches. Address Zeitung, Charleston, S. C.

Models and light machinery in brass or iron. Clauson & Tucker, No. 3 Alling st., Newark, N. J.

For improved double and single-roll carding machines, seven roll rubbers, twisters, card grinders, etc., address Union Iron Works, Rhinebeck, N. Y.

Spring-bed bottom—cheapest and best in use. Responsible Agents wanted in each State. Address S. C. Jennings, Wautoma, Wis.

One half of patent right of Wyatt's mode of reefing top gallant sails given for obtaining patent in England. Geo. Hart, New Bedford, Mass.

Mill-stone dressing diamond machine, simple, effective, and durable. Also, Glaziers' diamonds, and for all mechanical purposes. Send stamp for circular. John Dickinson, 64 Nassau st., New York.

The surest detective of low and high water, and high steam in boilers yet invented. Springer, Hess & Co., Philadelphia, Pa.

Paper Makers, Tanners, etc., wanting the Best and Cheapest Pump in use will send for Circular to Heald, Sisco & Co., at Baldwinsville N. Y. Agents wanted.

Tube Well—Best in Use.—Patented in 1865. State, County, and Town Rights for sale. Send for circular and prices. Address Dutton & Maguire, Port Jervis, N. Y.

Foreman or master mechanic, machine shop or rolling mill. Reliable. Address M. M., Syracuse, N. Y.

Merriman's patent bolt cutters—best in use. Address, for circulars, etc., H. B. Brown & Co., New Haven, Conn.

Bartlett's machine and needle depot, 569 Broadway, New York. Needles for all machines. Hackle, Gill Pins, etc.

Engineering facts and figures for 1867, mailed on receipt of $3. John Penington & Son, 127 S. 7th st., Philadelphia, Pa.

Entire, State, or shop rights for three new first-class toys for sale. Send 50c. for samples to J. Pusey, 700 Spring-Garden st., Philadelphia

EXTENSION NOTICES.

Lavinia L. Bartlett, administratrix of the estate of Russell D. Bartlett, deceased, of Bangor, Me., having petitioned for the extension of a patent granted to the said Russell D. Bartlett the 11th day of July, 1854, for an improvement in machine for making the heads of shovel handles, for seven years from the expiration of said patent, which takes place on the 11th day of July, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 22d day of June next.

Rebecca R. Gillett, administratrix of the estate of Thomas W. Gillett, deceased, of Chicago, Ill., having petitioned for the extension of a patent granted to John Matthews as assignee of the said Thomas W. Gillett the 11th day of July, 1854, for an improvement in apparatus for corking bottles, for seven years from the expiration of said patent, which takes place on the 11th day of July, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 22d day of June next.

Asa Oliver Butman, administrator of the estate of James A. Cutting, deceased, of Boston, Mass., having petitioned for the extension of a patent granted to the said James A. Cutting the 11th day of July, 1854, for an improvement in composition for making photographic pictures, for seven years from the expiration of said patent, which takes place on the 11th day of July, 1868, it is ordered that the said petition be heard at the Patent Office on Monday the 29th day of June next.

Albert H. Tingley, of Providence, R. I., having petitioned for the extension of a patent granted to him and his co-assignee, Edmund W. Tingley, the 18th day of July, 1854, for an improvement in machines for sawing stone and marble, for seven years from the expiration of said patent, which takes place on the 18th day of July, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 29th day of June next.

R. H. Garrigues, administrator of the estate of L. A. Dole, deceased, of Salem, Ohio, having petitioned for the extension of a patent granted to the said L. A. Dole the 25th day of July, 1854, for an improvement in arrangement for lathe chucks, for seven years from the expiration of said patent, which takes place on the 25th day of July, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 6th day of July next.

Wm. S. Chapman, of Wilmington, Del., having petitioned for the extension of a patent granted to him the 8th day of August, 1854, for an improvement in preventing rattling in carriages, for seven years from the expiration of said patent, which takes place 8th day of August, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 20th day of July next.

Norman Millington, of Shaftsbury, Vt., having petitioned for the extension of a patent granted to him the 8th day of August, 1854, for an improvement in machine for graduating carpenters' squares, for seven years from the expiraton of said patent, which takes place on the 8th day of August, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 20th day of July next.

Elliot Savage, of Meriden, Conn., having petitioned for the extension of a patent granted to him the 11st day of November, 1854, and reissued in two divisions the 27th day of September, 1859, and numbered respectively 826 and 827 for an improvement in machines for threading screw blanks, for seven years from the expiration of said patent, which takes place on the 21st day of November, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 24th day of August next.

NEW PUBLICATIONS.

ENGINEERING FACTS AND FIGURES FOR 1867. Illustrated. John Penington & Son, 127 South Seventh street, Philadelphia.

A handy volume of about 400 pages, illustrated with plates and engravings of mechanical subjects, intended to show the advancement made in the arts and sciences during the past year, especially noting the exhibition of improvements made in the great exposition at Paris. Much of the work is made up from articles which appeared in the SCIENTIFIC AMERICAN and kindred periodicals (to which due credit has been given), and they are presented in a very convenient and concise form.

ANNUAL OF SCIENTIFIC DISCOVERY; a year-book of Science and Art for 1868. Gould & Lincoln, 59 Washington street, Boston.

This is a volume, as its title denotes, containing some account of all the important discoveries and improvements in mechanics and the useful arts, natural philosophy, chemistry, astronomy, geology, etc., beside notices of the lives of eminent scientific men deceased within the year, a fine engraving of Prof. Wm. B. Rogers, LL.D., President of the Massachusetts Institute of Technology, and other interesting matter. It is a valuable annual to the scientific or mechanical student for reference. This and the previous volumes from its commencement should be in every library. For a number of years this work was ably edited by Hon. D. A. Wells, now holding the office of Commissioner of Revenues.

EXPLORATION OF THE NILE TRIBUTARIES OF ABYSSINIA. By Sir S. W. Baker, M. A., F. R. G. S. Hartford: O. D. Case & Co. 1868. 608 pages; price $3.50.

The thick cloud of mystery which has so long hung over the Nile is being gradually and completely dispelled by the explorations of the scientific traveler. We are now no longer left in uncertainty as to what supplies its main stream, or the cause of its periodical overflow and fertilizing influence. To such men as Speke, Grant, and Baker we are indebted for the solution of questions which have for centuries puzzled the world. In "The Albert N'yanza Great Basin of the Nile," published by Sir Samuel in 1866, we have an account of the grand reservoirs—the equatorial lake system—from which the Nile issues. In the present volume he describes twelve months of his journey during which he explored the Abyssinian tributaries, the sudden rush of muddy waters which, in July, August, and September, causes the inundation which irrigates and fertilizes Egypt. We may mention, as an element of interest in Baker's African explorations, that he was accompanied during the whole journey by his wife. The narrative is often exciting, always instructive, and never dry. A certain wild, open-air sort of freedom pervading the style might naturally be expected in the writings of one who has spent the greater part of his life in travel and adventure. The engravings and maps serve not only as embellishments but as valuable illustrations of the text. The book is elegantly printed and will be found a pleasing addition to the family library.

THE PUBLIC LEDGER BUILDING.

To Geo. W. Childs, Esq., proprietor of the Ledger Newspaper Establishment, Philadelphia, we are indebted for a handsome volume of nearly 200 pages, giving an account of the proceedings at the banquet given at the opening of the elegant new iron *Ledger* building on Chestnut street last June The energetic, systematic, and business qualities, are seldom found in such complete harmony as they are exhibited in Mr. Childs. In every morning's issue of the *Ledger* is evinced the industry of its proprietor, and the fine intrinsic taste of the author is forcibly shown in the volume before us. A truthful steel-plate vignette of Mr. Childs, delineating to a wonderful degree the benevolence and good nature which characterize him among his acquaintances, graces as it should the first page of the volume, and then follows interspersed through its pages a large number of wood engravings of the press vaults, compositors' rooms, editorial rooms, and other apartments pertaining to a first-class daily paper.

THE ECLECTIC MAGAZINE. W. H. Bidwell & Co., No. 5 Beekman street, New York.

For twenty-five years the "Eclectic" has been published, and is the oldest magazine, we believe, in this country. It makes no claim to originality, but is made up mostly from selections from foreign reviews. Every number contains a fine steel-plate portrait of some distinguished person. The May number has a portrait of Earl Albemarle, with a sketch of his life by the editor. $5 per annum; 45 cents single numbers.

THE BROADWAY. May. Routledge & Sons, 416 Broome street, New York.

This is the only illustrated magazine that comes to our sanctum. It is published monthly, and may be had at the news stands for 25 cents a copy.

PUBLIC SPIRIT. Le Grand Benedict, 37 Park Row, New York.

This monthly improves with each issue. The May number, just out, is well worth its price—25 cents.

THE NEW ECLECTIC. Turnbull & Murdoch, 49 Lexington street, Baltimore, Md. Price $4 per annum. Monthly.

The May number of this new magazine of select literature is just out.

ATLANTIC MONTHLY. Ticknor & Fields, Boston.

Four dollars per annum; 35c. single copies. May number out.

ALLEN'S CATALOGUE.

R. H. Allen & Co., 189 Water street, New York, have just issued an illustrated catalogue of agricultural implements, machinery, and hardware, adapted to the farm and plantation. The book contains 270 pages and 550 engravings, handsomely printed on cream colored paper. Price

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Improved Device for Drying and Cooling Flour.

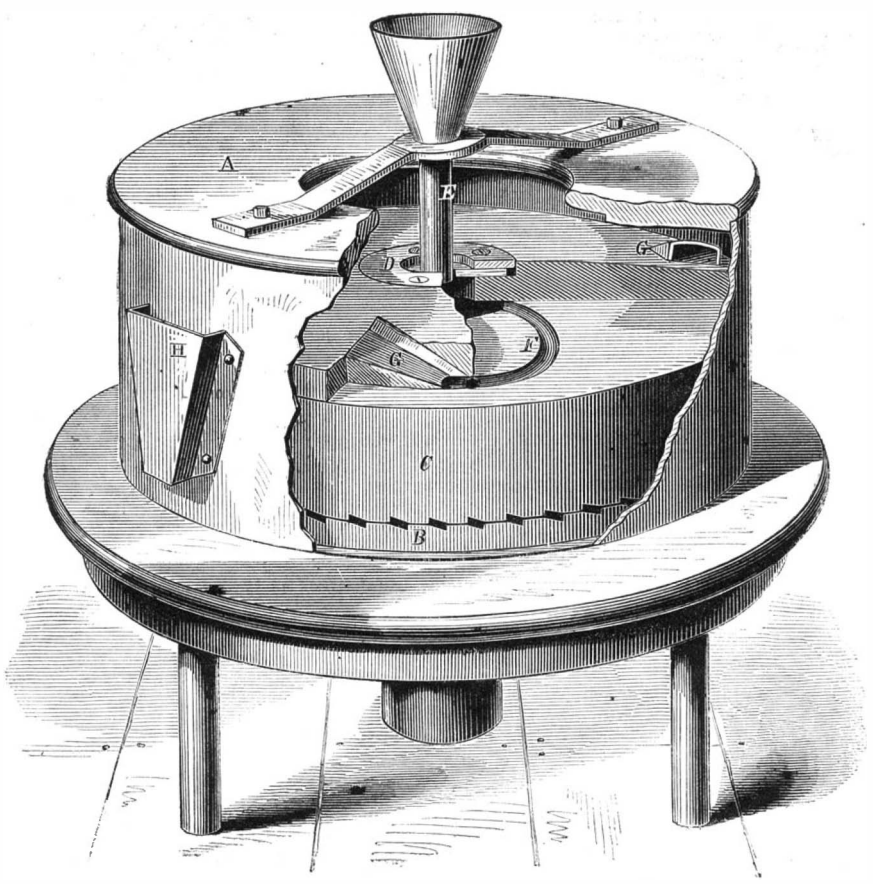
The invention represented in the engraving is a new and useful arrangement of a device for conducting fresh air between a pair of mill stones and expelling it from the curb, for the purpose of cooling the stones and carrying away the vapor arising from friction in grinding grain; thereby, it is claimed, increasing the capacity of the stones from fifteen to twenty-five per cent, saving a proportionate amount of fuel in steam mills and power in water mills. It is intended also to prevent the stones from injuring the color of the flour by becoming overheated, and to leave it in a dry state so as to diminish the danger of spoiling.

Expelling the air from the curbs, that portion of the meal that by the usual process is lost in being allowed to lie and rot in the curb, is saved; no inconsiderable item to proprietors of mills.

In the engraving, A is the curb of a run of mill stones, B the bed stone, and C the runner. In the eye of the runner are two metal flanges, D being one, between which is held a washer of leather or some other elastic material that envelopes the feed tube, E, preventing any access of air at this point. Tubes, shown in the engraving at F, are let into the back of the runner, leading to the eye, the opposite ends communicating with the hoods, G, at the skirt of the runner, so that they shall catch the air as the upper stone or runner revolves, and force it in through the pipes, F, to the eye of the stone, and thence, with the grain, down between the runner and bedstone, the flanges and leather disk around the feed pipe preventing escape in this direction. Around the inside of the curb a circle of leather or some other pliable substance bears against the runner to prevent the escape of the heated air in this direction; it is forced through two or more vent holes, H, which may have pipes connected to lead the vapor and hot air away from the curb.

The currents of air, thus carry off the heat generated by friction, and also the vapor arising from the grain, delivering the product in good order.

Patented through the Scientific American Patent Agency, January 28, 1868. All orders should be addressed to Campbell and Brown, Box 2,894 St. Louis, Mo. The device is highly recommended by practical millers who are using it.



CAMPBELL'S AUTOMATIC COOLER FOR MILL STONES.

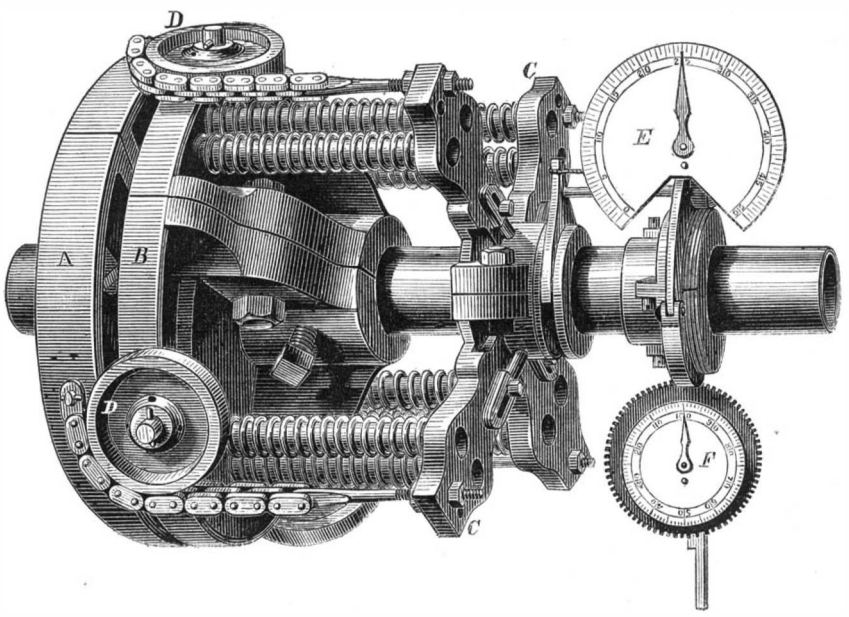
Improvement in Power Measurers.

In No. 16, present volume, we inserted an article on the "Absorption and Transmission of Power," with a closing paragraph expressing the desire that some reliable power measurer, giving the actual amount transmitted by belts, should be invented. Since then we have seen the apparatus illustrated in the engraving accompanying this article and witnessed its operation. It appears to answer the demand, as it really weighs the power exerted on a main or counter shaft and records it on a dial, the face of which is in plain sight. In fact it is an adaptation of the spring balance, differently applied of course, but operating on the same principle.

The dynamometer usually known as Neer's is, in construction and operation, quite different from the one herewith illustrated. That had rather a limited range and was liable to get out of order unless nicely adjusted and carefully attended to. This, however, is a new machine patented only a year ago—January 15, 1867—and is attached directly to the shaft without the intervention of belts, and the whole power is transmitted directly through the machine.

Part A in the engraving is a disk, halved across its diameter for convenience of placing it on the shaft without removing couplings. It is attached by steel set screws to the hub of the driving or driven pulley, or of a coupling, the set screws or key of the pulley being removed to allow it to turn easily on the shaft, so that the dynamometer, itself, becomes the medium through which the power is transmitted. B is a similar disk, also halved, carrying on its periphery two, three, or more rollers, turning on studs seated in the rim of B, and having triple linked machine chains of hardened steel passing over them, the other ends of which are attached to the arms, C, the hub of which is halved similar to A and B. These—B and C—act together, revolving with the shaft, while the disk, A, revolves with the pulley to which it is secured. Tempered steel spring surround bolts between B and C, which springs are expanded or contracted through the medium of the chains and the rollers, D.

As the resistance to the power increases, the shaft, and with it the disk, B, slackens in speed and the springs are allowed to act on the arms, C, against which they bear, actuating a pointer on the dial, E, by means of a cord passing over a whirr to the shaft of which the pointer is secured, fastened at the other end to a forked clutch fitting the hub of C. A gland with a worm turning with the shaft carries a strap of power being used by any line of shafting to which it is attached. One of them may be seen in operation at E. P. Gleason's, 135 Mercer street, this city, and all orders for machines or for measuring power should be addressed to Geo. C. Roundey, No. 254 Broadway, New York city, where the dynamometer may be examined as a whole or in its parts.



NEER'S PATENT DYNAMOMETER.

Microscopical Examination of Damaged and Valuable Papers.

The Buffalo *Medical and Surgical Journal* reports the following extract from a lecture delivered by Dr. E. H. Parker of Poughkeepsie, before the New York Medical Society, the remarks being occasioned by an investigation the Doctor had made in two very interesting cases of forgery to which he had been called as an expert:—

The first was one in which it was an alleged promissory note, signed by a blind man who had deceased. The gentleman in question had become blind by cataract, but was nevertheless in the habit of signing all important papers. The body of this note was written by a different hand, in blue ink, and the name in black ink. The question came up as to whether the body of the said note was written before that of the signature or not.

The paper folded end to end across the middle. Prints of black ink were transferred from the black signature, and were found on the opposite side. In several places the blue and black ink of the dots were in conjunction. It was impossible to tell which was put on last, till a place was found where the bottom of a letter *y* and tip of a letter *h* came together over a dot, and showed the blue ink on top.

The same paper read, "*one day* after my death I promise to pay," etc. It showed clearly under the microscope that it had been written "one *year*," an erasure having been made, and *day* written in.

The other paper was an alleged receipt for $2,000, paid on May 11th. That amount had been paid May 1st, and this alleged payment was denied to have been made. Examination by microscope showed that the first figure 1 of the date was in *brown*-black ink, while the second and the rest of the paper were in *blue*-black ink. Transfer had been made of the *brown*-black ink to the other end of the paper by folding, showing that it was put on last. The two shades of black show only under the microscope; to the naked eye they are alike.

Dr. Squibb, in this connection, referred to the following case: A number of U. S. bonds were stolen some time since from a party, and their payment stopped. For a long period nothing could be discovered in relation to them. Finally, however, two bonds with the same numbers were found in Wall street, and it occurred to the parties concerned that one of these must be of the lot that had been stolen. The difficulty was to decide which was the genuine, and it was cleared up by a microscopical examination of the ruled lines upon which the figures were written in red ink. The magnifying glass showed the tracings of the old figures underneath the new, the red ink of the former having been previously removed by a chemical process.

Turkish Hair Dye.

In answer to a number of correspondents inquiring for information as to the best preparation for coloring the hair, we give the following from the pen of Septimus Piesse, a practical chemist and perfumer in London:

In Constantinople there are some persons, particularly Armenians, who devote themselves to the preparation of cosmetics, and obtain large sums of money from those desirous of learning this art. Amongst these cosmetics is a black dye for the hair, which, according to M. Landerer of Athens, is prepared in the following manner:

Finely pulverized galls are kneaded with a little oil to a paste, which is roasted in an iron pan until the oil vapors cease to evolve, upon which the residue is triturated with water into a paste, and heated again to dryness. At the same time a metallic mixture, which is brought from Egypt to the commercial marts of the East, and which is termed in Turkish *Rastikopetra*, or *Rastik-Yuzi*, is employed for this purpose. This metal, which looks like dross, is by some Armenians intentionally fused, and consists of iron and copper. It obtains its name from its use in dyeing or staining the hair, and particularly the eyebrows—for *rastik* means eyebrows, and *yuzi* stone. The fine powder of this metal is as intimately mixed as possible with the moistened gall mass into a paste, which is preserved in a damp place, by which it acquires the blackening property In some cases this mass is mixed with the powder of odorous substances which are used in the seraglio as perfumes, and called *karsi*—that is, pleasant odor; and of these the principal ingredient is ambergris. To blacken the hair, a little of this dye is triturated in the hand or between the fingers, with which the hair or beard is well rubbed. After a few days the hair becomes very beautifully black, and it is a real pleasure to see such fine black beards as are met with in the East among the turks who use this black dye. Another and important advantage in the use of this dye consists herein, that the hair remains soft, pliant, and for a long time black, when it has once been dyed with this substance. That the coloring properties of this dye are to be chiefly ascribed to the pyrogallic acid, which can be formed by treating the mass with water, may be with certainty assumed.

Process of Preparing Coffee.

In the process of roasting coffee, as ordinarily practiced, much of the aroma is dissipated, and the quality of the coffee is impaired. This invention is to obviate these objections. In a suitable vessel place a quantity of olive or other oil, butter, or animal fat, and raise the same to a temperature of, preferably, 400° Fah., whereupon the green coffee is placed therein, and subjected to the cooking or boiling action of the heated oil or material for about five minutes. The coffee is then removed and placed upon a suitable strainer to drain and cool. The coffee being surrounded by unctuous matter during its preparation, the escape of the aroma is prevented; and inasmuch as the oil may be readily kept at the desired temperature during the whole operation, any injury to the quality of the coffee by excessive heating is also prevented. The oil, butter, or other like material, after being once heated, may be used repeatedly for different quantities or batches of coffee. Patented by Benj. T. Babbitt, New York city

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Contents:

(Illustrated articles are marked with an asterisk.)

*Device for Removing Seeds and Pits from Fruit 289
Telegraph Insulation 298
Improvement in Coating Metals.. 298
Manufacture of Whiting and Paris White 289
Editorial Correspondence 290
Steel and Iron Rails 291
A Literary Bureau Wanted 291
Insecurity of Buildings—Protection from Fire 291
Atmospheric Temperature and Snow 291
Steam Economy 291
Alumi um Bronze 291
Neutral Acetate of Lead 291
How is a Ball kept in a Fountain Jet? 291
Parasites on Insects and other Animals 292
Polygons 292
*Improved Attachment to Mowing and Reaping Machines 292
*Telescopic Speaking Trumpet 292
*Martin's Patent Safety Swing 292
*A Flying Parachute 292
*Another Optical Illusion 292
*Locke's Self Lighting Gas Burner 293
ictorial Printing 293
*The Construction of Watches 293
Manufacturing, Mining, and Railroad Items 294
Recent American and Foreign Patents 294
Answers to Correspondents 295
Extension Notices 295
New Publications 295
*Improved Device for Drying and Cooling Flour 296
*Improvement in Power Measures 296
Microscopical Examination of Damaged and Valuable Papers 296
Turkish Hair Dye 296
Process of Preparing Coffee 296
Constructive Mechanics and Educational Means 297
Forging by Drops and by Hammering 297
Water Meters 297
The Wheel Question 297
To Inquiring Correspondents 297
The Polytechnic Club of the American Institute 297
Patent Claims 298, 299, 300, 301, 302
Pending Applications for Reissues 302
Inventions Patented in England by Americans 302

CONSTRUCTIVE MECHANICS AND EDUCATIONAL MEANS.

Said a skillful and successful inventor to us lately, when we were congratulating him upon his having accomplished a difficult feat of hydraulic engineering, the reward of many years of study and costly experiment: "If I never should regain a dollar I have expended upon this problem, I have received a certain amount of education at a cheaper rate than I paid in my youth at the schools for rudimentary instruction," and, he added, "I should have had this return if I had been unsuccessful in my special attempt."

We understood his meaning to be that the knowledge, acquired skill, and the mental development obtained by his researches, and his efforts to bring about a definite mechanical result were, aside from the pecuniary benefits that might rearonably be expected to attend its successful accomplishment, a sufficient remuneration for the time, labor, and money expended.

The remark led us to consider the adaptability of invention to educational purposes, and the practicability of its introduction for that purpose into schools of mining and engineering. The result of our reflections, has been to assure us of the entire practicability of its adoption for that purpose, of the possibility of a good text book upon the subject, and its great educational value.

A discovery is not, properly speaking, an invention, although the meanings of the terms are frequently confounded. The former may happen, the latter is never directly the result of a coincidence. The first may result from observation alone, the second is a conclusion reached by a train of reasoning as severe and logical as a geometrical demonstration. Chemistry is at present the principal domain of physical discovery, and constructive mechanics, is the chief field of invention. "Constructive Mechanics" would not be an inappropriate title for the proposed text book. Mechanics, as now taught in the schools, treat of the natural laws which underlie and constitute the philosophy of the elements of machinery. Constructive mechanics should go further than this. It should not only treat of motors, motion, and the conversion of motion, but should teach the different devices for changing the direction of motion and its communication from one body to another, and the philosophy of these devices. It should give rules for the criticism of mechanical structures, and supply specifications to be reduced to drawings for the application of these rules. It should classify materials according to their mechanical properties, and give the chemical and physical characteristics of each as minutely and concisely as possible, with a brief reference to such imperfectly known substances as may probably be determined by future investigation to be valuable for constructive purposes.

Finally, it should give problems of construction, combining the general conditions of the precise work to be accomplished and the peculiar limiting circumstances under which it is to be performed, to be solved, and the answer given in drawings and specifications of the device which it is claimed will perform the service or labor required. To enable the student to grapple easily with such problems, it should teach him how to analyze the main problem into its subordinate problems, and to generalize them so that the solution of these minor elements shall apply not only to the machine adapted to accomplish the specified purpose, but to any other machine in which the minor device is, or may become an element.

We are confident that such discipline would develop the mental powers more than any other method, and might be admitted with great propriety and benefit into the latter part of the course of instruction, in schools of mining and engineering. If there exist any valid objections to our views of this subject we have failed to discover them, and should be happy to have them suggested, should any be found by others who may peruse this article.

FORGING BY DROPS AND BY HAMMERING.

Of late years the drop has become an almost indispensable tool for the manufacture of small articles of iron and steel, as the parts of machinery, firearms, etc. Its operation in connection with properly made matrices and dies, is so perfect, reproducing almost infinitely the form in its exactness and leaving the material in excellent shape for after working, that it would hardly seem it could ever be greatly improved, much less be superseded. Yet we have lately heard practical and observing mechanics express doubts of the perfection of the drop, and suggest that hammering in connection with dies would be preferable. The idea, it seems to us is worthy of consideration and examination. While it may not be that a sudden, single, heavy blow, violently disturbing and re-arranging the particles of iron or steel will materially injure the metal—deteriorate its quality—yet it is well known that iron and steel are improved by judicious hammering.

In some cases the drop is used several times on the same piece of metal; one die giving it the first crude, undeveloped form, another heating and the next die bringing it to an advanced stage, a proceeding repeated perhaps once, twice, or thrice more. This repetition may serve a similar purpose to tilting or hammering, toughening and refining the metal. But this repetition, being at the most but four or five very heavy blows, can have no such effect on the metal as rapid, light blows repeated indefinitely. The drop may condense the metal, but it can hardly refine or toughen it. If the interior of the bar from which the article is formed contains impurities they cannot be driven out by the action of the drop, nor can a semi-crystalline structure be made fibrous; the only safety for the good quality of the product is an assurance of the original excellence of the iron or steel. The advantages of the drop, however, in rapidity of work and perfection of form of the product, justify its very extended use, and tempt to its employment where, perhaps, a somewhat slower process will produce more perfect results.

In regard to the best material for drop dies there is some difference of opinion. Usually they are made of steel—refined cast steel—but these break so frequently that their renewal is a large item of expense. If the article to be dropped is of a wedge like form, however slight, the edge bevel and the outward pressure in the combination with the shock of the blow, tend to split the die, so that if the metal fills the matrix or tends to spread, the dies will be very short lived. We have heard practical operators assert that it is better the metal should more than fill, than that it should exactly fill or fall a little short, alleging as a reason that the sprew which spreads on each side forms a cushion of soft metal for the reception of the drop, preserving both it and the die. There is, at least, a show of reason in this, as the steel or iron is worked red hot—in which state the finished article often leaves the drop—and is consequently soft. But lately we have been informed that strapping the dies with tough wrought iron adds immensely to their endurance, the hoops being shrunk on after the dies are otherwise finished. This appears to be a very sensible recomendation. Further we are told that Swedish, Lowmoor, or other tough iron is superior to the best steel for endurance, while it can be worked by the die sinker as readily. This may be correct, as the iron or steel worked under the drop is always worked at a red heat or higher. One use of the drop, not perhaps generally known, is in finishing surfaces while cold. The article is placed in a die and the polished steel face of the drop hammer allowed to come in violent contact with it. The effect is to condense the particles of the surface, leaving it in excellent condition for polishing.

It may be that notwithstanding the apparent advantages of the drop, many articles now formed—we can hardly say forged—by it might be improved in quality by the substitution of one of the rapidly acting power-hammers now so justly in favor with mechanics. This consideration, we think, is well worthy the attention of our mechanics.

WATER METERS.

As the population of our larger cities increases, and the use of water increases in consequence, a constant and sufficient supply is a subject of great moment, and of growing anxiety to Boards of Commissioners and corporations. A method of equitable assessments, and a mode of preventing the enormous waste consequent upon the general and often wanton carelessness of consumers has become a desideratum.

A careful consideration of the subject, together with an examination of the reports of superintendents of different works, and the opinions of those who have given it great attention is sufficient to convince us that 'meters are the only means of accomplishing these objects.

The demand for water meters has existed for a considerable period in this country, and for a still longer period abroad, and a large number of inventions have been made to meet it. Occasionally some of these devices have been adopted by corporations, only to prove themselves unequal to the requirements of the case, and to be eventually thrown aside as worthless. In a few instances meters have been adopted because they would answer some good purpose, but nothing has yet been devised, and adopted that has proved itself to be what is wanted for general introduction and use.

The advantages that would accrue to all parties by the invention and adoption of such an instrument would render it one of the most valuable improvements of the age; but the difficulties of constructing a good water meter are so great and the conditions to be observed so numerous, that they are exceeded by very few mechanical problems. For the benefit of our readers whose minds may be directed to this subject, we here state what we understand to be the principal requisites of a water meter adapted to general use. It should be cheap. Its cost should not greatly exceed the cost of a gas meter, of a size suited to the dwelling or other building in which it is to be placed. It should be sufficiently accurate; that is, it should indicate with little variation the actual amount which passes through the service to which it is attached. It should be beyond all question durable, that is, it should be able to withstand the wear and tear of at least ten or twelve years' service.

The above-named, are the primary requisites, but to secure them, a host of obstacles must be surmounted, and if a meter is to be constructed that will answer for the measurement o oils and liquors, as well as for water, the difficulties are greatly increased. These difficulties consist in the selection of proper materials, so that neither the quality of the fluid to be measured, nor the instrument itself, shall be injured by mechanical action arising from grit or other foreign matters, or by the corrosive action of substances held in solution; the compensation for variations in pressure and temperature; the balancing of valves; the stopping of leaks through stuffing boxes; the protection from injury by frost; the making of an instrument in a sufficiently compact form to withstand the pressure of the great head to which meters are often subjected; avoiding the use of much head to work them; the non-interruption of the stream, so that the stream shall flow equally and not in spirts; capability of being placed back of all faucets in any building, block, or blocks of buildings, and registering equally well for one, or more, or all of them, together, etc.

The attempts which have been made to overcome these may be classed into four groups. Rotary meters, diaphragm meters, plunger meters, oscillating meters. Each of these groups comprise numerous devices which have been made the subjects of many letters patent, and a glance at the records for the past year will show that the number is still increasing. It is safe to say, however, that the device which will fully meet with the requirements of the case is not yet introduced, and that the field is an open one for the man who is successful in inventing it. Cheapness, simplicity of construction, and correctness in registering, are the grand requisites of a good meter.

THE WHEEL QUESTION.

Our readers are aware that we have set apart a special publication, entitled "THE WHEEL," for the purpose of presenting in handsome style, the views of the many writers whose letters we are unable, for want of space, to print in any other manner. Part first of "THE WHEEL" is to be issued May 15th, and it promises to be entertaining.

We have already received a variety of contributions, most of which are to be illustrated with diagrams, so that the views of the writers will be presented in a very intelligible and attractive manner.

The pages of "THE WHEEL" are open to all who choose to take part in the Wheel discussion, or who wish to present ideas, in their own way, upon any other scientific question. The only requirement is that each writer shall pay the cost of his type setting and diagrams. The expense for type is at the rate of $2 50 per printed page, 56 lines, 12 words to a line. Correspondents may thus easily reckon the amount and will please remit the same with their communications.

TO INQUIRING CORRESPONDENTS.

We are constantly receiving letters asking such questions as these: Who is the manufacturer of the best and cheapest stocking loom? Which is the best sewing machine? Who makes drain tiles and water pipes of the finest quality? Whose brick machine can you confidently recommend? A moment's consideration will convince our correspondents that a compliance with thousands of such requests would subject us to a responsibility which we do not feel called upon to assume. We are quite aware that information of this nature may be of the utmost importance to individuals, and, with a view of giving a legitimate and effective means of obtaining it, we have devoted a portion of our space to a certain class of advertisements, under the title "Business and Personal," to which we direct the attention of correspondents. A few lines under this heading will put the advertisers in communication with inventors and manufacturers throughout the world, and bring out satisfactory replies not obtainable in any other way.

THE POLYTECHNIC CLUB OF THE AMERICAN INSTITUTE.

For some time past we have omitted notice of the meetings of the above organization, except when the discussions were worth reporting. Last year we had occasion to allude to the irreligious tendencies of some persons who were allowed to speak, and protested against the atheistic theories sometimes propounded, which protest had at least the good result of calling forth a declaration of disapproval of such doctrines by the prominent men of that organization. Then came several long-winded lectures of a certain individual on ocean currents, upheaving of continents, etc., which, singularly enough, we find fully reported in the published transactions of the American Institute, and are now a standing memento, not only of the deficient scientific training of its author, but also of those who allowed the publication.

The Institute is again going astray. The attention of the Club has lately been given up to a long discourse of a spiritualistic-minded individual, about a new science discovered by him, and a new language invented by him. Notwithstanding he spoke, and read extracts from his book (in the course

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of publication), for about two hours, the audience left in utter ignorance of what the science consisted in, and after reading the whole book one may not know any thing more, as probably the extracts read are fair specimens of the rest; notwithstanding the speaker was urgently pressed by some members present to give at least some idea of the principles of the new science, all they could find out was, that its name will be *Universalogy;* that it will be above all other sciences, generalize them, supercede them all, and make even the study of them unnecessary, as it will teach them all by one single principle.

The speaker reminded us very much of the ancient alchemists, seeking for the elixir of life, which would make all other medicines superfluous, would give perfect health, etc. They were sure that such a medicine must exist, and can be found; some supposed they had got it. Just so the speaker mentioned is confident that such a science exists, that it can be found; in fact, that he has got it; that it will give perfect wisdom, make other learning superfluous, etc.

Thus far sciences have been generated and slowly developed after a laborious process by many minds, during several generations. The knowledge existed among the investigating class of men before the sum total of cognate truths had obtained a name, and then the new science appeared as a bashful maiden among her sister sciences, never boasting of what it would do; in fact, being utterly unconscious of its power, it never stated what it might do. Here, to the contrary, we have a single individual, who blows the trumpet about a new science discovered and developed by him alone, and, after all, he divulges nothing about it but the name and what it will do; we are utterly astonished at such vanity and conceit, and still more surprised that the Institute managers will permit such folly under their auspices.

The last quality becomes still more apparent by learning that the same individual has also invented a new language, to be studied and adopted by all mankind; it is destined to be universal, and to supercede the now existing and very inconvenient variety of languages over all the world. It is based on a simplification of the words which are now unnecessarily long, and too arbitrary. We can do with less letters if they are only combined systematically; for instance, in place of the arbitrary words and sounds, one, two, three, four, five, etc., we may say, ba, be, bi, bo, bu, da, de, di, do, du, fa, fe, fi, fo, fu, etc. Those are not the correct names, but it is about the manner in which the new language is compounded, avoiding the use of long words, as the twenty-five letters may be combined two and two in six hundred ways, and three and three in fifteen thousand ways, etc.

Perhaps we are too severe; perhaps the man only deserves our pity. The reader will probably have already come to the conclusion what is the matter with him.

On Thursday, April 10th, a gentleman read a long paper on terrestrial magnetism, and announced with a flourish almost equal to that of the preceding person, that he also had made an important discovery, namely; that the magnetic pole turned slowly around the geographic pole; a fact known a century ago, and stated in most books on natural philosophy. To the utter amazement of the learned individual, a member present stated this at the end of the reading of his long-winded paper, in which a new theory was expounded to explain the facts, mixing up magnetism, electricity, and gravitation, in the most absurd manner. It was asserted in this paper that all rotation was necessarily spiral, that the electricity passes instantaneously through the Atlantic Cable, and that the time of 0·6 seconds, reported to be found by experiment, was only the time it took the experimenters to record their observations; he made several other statements, partially absurd, and partially proving his lack of information about matters pertaining to the natural sciences, and finally mentioned that he intended to publish his paper to the scientific world, on which point we give the same short answer that the London *Punch* lately gave to a correspondent who asked his advice about getting married, namely: *"Don't."*

In order that the Polytechnic Club should be what the name suggests, the presiding officer should, in case persons apply with whose status in scientific matters he is not acquainted, take a look at the papers to be presented, in order not to cause the disappointment of a large number of persons, who come there to obtain useful information and to prevent the propagation of errors, and of crude or obsolete notions.

It may be answered that such may be, and usually are corrected at the same or on succeeding nights; but then we say that it is, if not a direct loss of time, at least, that the time could be better employed, than to listen for one hour to erroneous views, and then to spend another hour to hear them corrected.

Surely a steady atttendance of the right kind of listeners could be secured, were the public only sure that something useful and instructive would always be presented. As the case now stands, we know of many persons, even members of the association, who stay away, and some even who have been frightened away, by the crude and absurd notions of some people allowed to speak there, or by peddlers who wish to advertise their wares.

SILVERING HOOKS AND EYES. A patent has been granted in Bavaria, for the following method of silvering hooks and eyes made of iron wire. The articles are suspended in dilute sulphuric acid until the iron shows a clean, bright surface. After rinsing in pure water, they are placed in a bath of a mixed solution of sulphate of zinc, sulphate of copper and cyanide of potassium, and here remain until they receive a bright coating of brass. Lastly, they are transferred to a bath of nitrate of silver, cyanide of potassium and sulphate of soda, in which they quickly receive a coating of silver.

OFFICIAL REPORT OF PATENTS AND CLAIMS

Issued by the United States Patent Office,

FOR THE WEEK ENDING APRIL 21, 1868.

Reported Officially for the Scientific American.

PATENTS ARE GRANTED FOR SEVENTEEN YEARS, the following being a schedule of fees:—

On filing each Caveat	$10
On filing each application for a Patent, except for a design	$15
On issuing each original Patent	$20
On appeal to Commissioner of Patents	$20
On application for Reissue	$30
On application for Extension of Patent	$50
On granting the Extension	$50
On filing a Disclaimer	$10
On filing application for Design (three and a half years)	$10
On filing application for Design (seven years)	$15
On filing application for Design (fourteen years)	$30

In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay $500 on application.

☞ *Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to Inventors, may be had gratis by addressing MUNN & CO., Publishers of the Scientific American, New York.*

76,875.—FAN.—Seymour Ainsworth, Saratoga Springs, N. Y.

I claim, as a new article of manufacture, a fan, composed of the buckram foundation, covered with quill feathers throughout its center, on both sides, trimmed on its edge with down, and provided with a handle, attached substantially as described, the whole constructed and shaped as shown.

76,876.—WINDOW SASH HOLDER.—Edward Andrews, Pottsville, Pa.

I claim the arrangement and combination of the rack, C, box, A, latch, B, and spring, J, operating in the manner and for the purpose herein described and specified.

76,877.—SLEIGH.—Alonzo Armstrong and Alexander Weller, Buffalo, N. Y.

We claim the combination of the curved reach, H, with the pendent links, hangers and elevated standards for supporting the sleigh body upon the rear bob.

76,878.—STEAM SAFETY VALVE.—E. H. Ashcroft, Lynn, Mass.

I claim the valve seat, E, with its elbow orifices, h, in combination with valve cover, D, rod, c, and spring, E, or its equivalent, arranged, constructed, and operated in the manner as shown and described and for the purpose set forth.

76,879.—CHURN.—David D. Baker (assignor to himself and Harvey Campbell), West Alexandria, Ohio.

I claim the combination of wings, 1 2 3 4, and vanes, a b c d, with the canopy, D, rod, B, and lever, C, the parts being constructed, arranged and operating conjointly, in the manner and for the purpose specified.

76,880.—APPARATUS FOR CARBURETING AIR.—J. F. Barker, Springfield, Mass.

I claim, 1st, The steam pipe, a, placed within the air conduit, H, of a carburetor, or within a sufficient portion of the length of such conduit, for the purposes specified substantially as set forth.

2d, The arrangement, within the air space of a carburetor, of the steam pipe, a, for the purpose of directly heating the air contained within the carburetor, whether a portion of such steam pipe is immersed in the hydrocarbon for heating the same, or entirely exposed to the contained air, substantially as described.

3d, In combination with a carburetor or generator, the arrangement of independent water wheel, fan blower, and air conduit, H, the whole forming an apparatus for carbureting air, substantially as described.

76,881.—HORSE AND CATTLE POKE, ETC.—George W. Bell and George W. Fulmer, Hinckley, Ohio.

We claim the adjustable slide, C, in combination with the yoke, A, poke, B, and head, D, in the manner as and for the purpose set forth.

76,882.—STONE PAINT.—Benjamin V. Betterton, Piqua, Ohio.

I claim the compound above described, for the purposes above mentioned.

76,883.—REST FOR GRINDING HARVESTER CUTTERS.—Thomas Brett (assignor to himself and W. H. Saxton), Genoa, Ohio.

I claim the adjustable standard, B, and wheel, F, as arranged in combination with the jaws, A, for the purpose and in the manner as described.

76,884.—CARPENTERS' GAGE.—Wessel Brodhead, Meadville, Pa.

I claim the bar, A, and the head piece, B, constructed and operated as and for the purpose set forth.

76,885.—CASTER FOR FURNITURE.—John Brown, Utica, N. Y.

I claim forming the roller of the parts, B and C, and the plate, D, substantially as described and for the uses and purposes mentioned.

76,886.—TOY BOOMERANG PISTOL.—O. B. Brown, Malden, Mass.

I claim the toy herein described, consisting of an instrument for supporting and throwing a small boomerang, constructed and operating substantially as described.

76,887.—ARTIFICIAL FUEL.—A. W. Buckland and A. M. Daniels, Hartford, Conn.

We claim an artificial fuel made from the materials, in the proportions and in the manner substantially as above described.

76 888.—BRICK MACHINE.—E. P. H. Capron, Springfield, O., assignor to himself, George H. Gerrish and D. D. Rich.

I claim, 1st, Securing the striker plate in position, by means of the rod, i, and set screw, j, arranged to operate substantially as described.

2d, The rod, h, provided with a nut, i, and arranged to bear upon the striker plate, g, substantially as set forth.

3d, Facing the iron mold wheel, E, above described, with the detachable V-shaped steel plates, e, substantially as set forth.

4th, The incline, l, made adjustable both horizontally and vertically, for varying the pressure and pressing the brick from below, substantially as described.

5th, Providing the follower, m, with the hinged supports, p, thereon, and the springs, q, for supporting the follower clear from the track while the molds are passing under the hopper, substantially as described.

6th, The combination and arrangement of the hinged supports, p, nuts, s, and the shoulders, r', in the mold wheel, for adjusting the follower to vary the thickness of the brick, as desired.

7th, Providing the follower, m, with a friction roller, w, that can be adjusted to compensate for the wear of the rollers, or the track, or both, substantially as set forth.

8th, Securing the cloth to the plate by means of the grooves, t, and leather strips placed therein, and sewing through the leather, substantially as described.

9th, The plate, a', with beveled edges, and adjusted on the follower, m, by means of the screws, substantially as set forth.

76,889.—MANUFACTURE OF MEAT AND OTHER BISCUIT.—John Carr, of the Crescent, Clapham, and Charles Lucop, Drummond Road, England. Patented in England January 18, 1868

We claim the manufacture of meat and other biscuits by first baking such of the ingredients of the biscuit as require to be baked, then adding extract of meat or such other of the ingredients of the biscuit as would be injured by the heat of the oven, and forming the whole into biscuits by pressure or force applied to the ingredients while they are contained in molds, substantially as hereinbefore described.

76,890.—SHEET-METAL CAN.—Joseph Cartwright, South Reading, Mass, assignor to himself James Cartwright, Jr., and W. K. Lewis.

I claim a polygonal can, having but one side joint, and a groove, d (for receiving a lip turned down from the head), when said groove is made before the body is formed or bent up, substantially as described.

76,891.—SASH FASTENER.—O. Cate, Boston, Mass. Antedated April 9, 1868.

I claim a fastener for window sashes, etc., composed of an arm or arms, O, and a slide, U, when arranged and combined togther, substantially as and so as to operate as described.

76,892.—TOY.—Dominico Checkeni, New York city, assignor to himself. John W. Boteler and Charles K. Sherwood, Washington, D C.

I claim, 1st, Combining two cocks or other animals by rods, cords, wheels, or an equivalent therefor, in such manner that by operating the said rods, cords, or wheels, the said cocks or other animals will be caused to imitate the motions peculiar to such animals when fighting, substantially as herein shown and described.

2d, Connecting the heads or bodies of the birds or other animals together by means of a horse hair, or an equivalent therefor, running from one to the other, substantially as and for the purposes herein specified.

76,893.—LOW WATER INDICATOR FOR STEAM GENERATORS. Levi H. Colburn, Chicago, Ill.

I claim a low water indicator for steam boilers, constructed, connected, and operating substantially as herein described.

76,894.—BOSOM PAD.—J. C. Cook, Buffalo, N. Y.

I claim a bosom pad, consisting of an inflatable body or sack, provided with a non-elastic covering of fibrous material, shaped to the contour and dimensions desired, substantially as herein described.

76,895.—CAM FOR CARD-STRIPPING MACHINES.—Seldon L. Crockett and Benjamin T. Mills (assignors to Benjamin T. Mills), Lowell, Mass.

We claim, 1st, The lifting and replacing cam, B, constructed as shown and described, viz, with the prominent portions indicated as 5 6 and 7, and the depression between 6 and 7, and a flange or flanges, k, to relieve and ease down the top flats, and again elevate the same, substantially in the manner and for the purpose set forth.

2d, The cam, B, provided with a flange, k, constructed as described, and operating in connection with the slide and its pin, 1, as and for the purpose set forth.

76,896.—BALLAST KEEL FOR BOATS.—Henry A. Dirkes, New York city. Antedated April 7, 1868.

I claim the ballast keel, B, hung or attached to the boat by toggle joints, C, and operating or operated substantially as described.

76,897.—COMPOSITION FOR BLACKING LEATHER.—John N. Engelhardt (assignor to E. E. Hendrick and Peter Dolan), Carbondale, Pa.

I claim the ingredients in combination, substantially as described for the purpose named.

76,898.—FIRE-PROOF SAFE.—John Farrel, New York city.

I claim constructing the front casing and the door of fire-proof safes each of two or more plates of iron, with a non-conducting substance interposed between the several parts, substantially as described and for the purpose set forth.

76,899.—MACHINE FOR FORMING FIFTH WHEEL.—George Feightner, Wooster, Ohio.

I claim, 1st, The removable rings, D D, in combination with the platform, A, and adjustable cam lever, E, substantially as and for the purpose set forth.

2d, In combination with the above, the slotted brace, F, and screws, G G, when used as set forth, for the purpose of retaining the fifth wheel in place while undergoing its formation.

76,900.—WRENCH FOR CARRIAGE WHEEL.—Levi B. Fisk, Lockport, N. Y.

I claim a hand wrench combining the forks, C C, and socket, B, in a single device, when employed in connection with the hub holes, F F, the whole arranged and operating in the manner and for the purpose herein described.

76,901.—DEVICE FOR MULTIPLYING REVOLUTIONS AROUND AN AXIS.—Lemuel S. Fithian, East New York, N. Y.

I claim, 1st, The combination of the reversing wheel, R, partitioned, revolving cylinder, C, with one or more sets of multiplying and intermediate wheels, D and P, with straps, g g, when combined substantially as herein set forth.

2d, The straps, g g and g, and their equivalents, when employed to sustain and strengthen the ends of the axes on which the intermediate wheels, P P' and P", revolve.

3d. The reversible hollow cylinder, C, by means of one or more wheels, P and b, one having an axis coincident with the axis of the shaft, and the other or others parallel therewith.

76,902.—DEVICE FOR MULTIPLYING MOTION ON A SINGLE SHAFT.—Lemuel S. Fithian, East New York, N. Y., assignor to himself, James M. Hopkins and Jefferson W. Southmayd, New York city.

I claim, 1st, The stationary lever, B, having slot and communicating wheel, b, the wheel or disk, A, and lever or wheel, A', carrying slot and communicating wheel, a, and fast upon the shaft, S S, the reverse revolving wheel or disk, D, the revolving wheels or disks, D E F, etc., carrying slotted lugs, and the communicating wheels horizontal to the shaft.

2d, The stationary lever or slot, B, and communicating-horizontal wheel, b.

3d, The combination of the wheel or disk, A, and the slotted lever, A', with communicating wheel, d.

4th, The reverse revolving wheel or disk, C, geared differently.

5th, The revolving wheels or disks, D E F, and the slotted lugs carrying wheels, d e, arranged horizontal to the shaft.

76,903.—BROADCAST SEED SOWER.—F. G. Floyd and E. A. Floyd, Macomb, Ill.

We claim, 1st, The disk, A, with flanges, a, which flanges do not radiate in a direct line from the center, but whose inner ends are inclined forward in the direction of the revolution, as and for the purpose described.

2d, The shaft, B, with shoulder, b, thread, b1, and nut, b2, in combination with disk, A, as and for the purpose described.

3d, The pointed arm, C', in combination with shaft, B, as and for the purpose described.

4th, The feeding holes, D D', when arranged in relation to each other and to the disk, A, substantially as described.

5th, The bushings, d, in combination with holes, D D', as and for the purpose described.

6th, The bag, F, with open ring, f, in combination with hopper, F', and catches, G G'.

76,904.—HYDRAULIC MAINS FOR GAS WORKS.—James R. Floyd and Joseph A. Sabbaton, New York city, assignor to James R Floyd.

We claim the combination of the main pipe (constructed with a lateral opening) with a lateral port plate (formed separately, and applied to the lateral opening of the main pipe), substantially as before set forth.

Also, the combination of the said main pipe, lateral port plate (formed separately, and applied to the lateral opening of the main pipe), and dip nozzles for the ports in the lateral port plate, substantially as before set forth.

76,905.—DINNER PAIL.—James H. Foote, Pittsfield, Mass.

I claim, 1st, One or more trays, b b', in combination with the drawer, d, and pail, e, as and for the purpose specified.

2d, One or more drink cans, c c', in combination with the drawer, d, and pail, e, as and for the purpose specified.

3d. The drawer, d, in combination with one or more trays, b b', one or more cans, c c, and the pail, e, as and for the purpose specified.

76,906.—CONVERTIBLE CARRIAGE POLE.—Francis Fowler, West Haven, Conn.

I claim the attachment of removable poles by means of the shifting rods D D, which slide either way along the metallic cross bar, A A.

76,907.—HAND TRUCK.—Joshua Garsed, Frankford, Pa.

I claim the within-described hand truck, constructed and operating substantially as specified.

76,908.—DRY GAS METER.—William Wallace Goodwin, Camden, N. J. Antedated November 5, 1867.

I claim the application, to a dry gas meter, of a device or combination of devices whereby the orifice in the plate through which the current of gas passes to or from the valves, will be either entirely closed or fully opened thereby, in accordance with the relative positions of the meter between the supply and discharge pipes, as described, the said device or combination of devices being constructed and operated in the manner herein described, or in any other manner that will produce the same effect.

76,909.—COMBINED CORNSTALK CUTTER, CULTIVATOR, ETC.—Matthew Gordon, Washington, Iowa.

I claim the cylinders, o p q, with cutters and teeth or hoes arranged upon the shaft, and operated substantially as and for the purposes herein recited.

76,910.—BOILER.—Chauncey O. Green and Robert Ham, Troy, N. Y.

We claim, 1st, In combination with a cooking stove or range, a water reservoir or boiler, B, when hinged or pivoted to or upon said stove or range-top, in manner such that the said water reservoir or boiler may be turned, revolved, or shifted thereon about its pivot center, and thereby be made to rest upon or over the differently heated parts of said stove or range top, to thereby increase or decrease, or regulate the temperature of water within said reservoir or boiler, substantially in manner as hereinbefore described and shown for the aforesaid purpose.

2d, In combination with a cooking stove or range, the arrangement of the exit passage or flue thereof, for the gases of combustion, and the said pivoted turning, or shifting water reservoir, both at one and the same end of said stove or range, in manner substantially as described, so that the escaping gases of combustion thereout shall impart heat to said water reservoir, in any one of its shifted positions on and over the stove or range top, as set forth.

3d, A cooking stove or range, having a top plate provided with pot holes, E, and a water reservoir, B, so mounted and pivoted thereon that it can be turned or shifted horizontally about its pivot center, as described, and placed over, or partly over, the said pot holes, so as to receive the greatest heat from the stove or range, and also be turned off horizontally, to leave the said pot holes exposed or open and free, to place culinary vessels therein, as set forth.

4th, In combination with a stove or range top, pot holes, E, and a water reservoir, turning or shifting about its pivot center thereon, as described, a loose and removable cover plate or hood, I, substantially as and for the purpose set forth.

5th, The manner of securing said pivoted and shifting reservoir to the stove or range top by means of the collar, h, with lug, a, and flange ring, e, with notch, b, or any equivalent device therefor, which shall hold the said reservoir upon the stove or range top so that it may turn about its pivot center, as described, and keep it securely thereon, in any one of its shifted positions on and about its pivot center, as set forth.

6th, In combination with a stove or range, and a water reservoir, moving or shifting about its pivot center thereon, as described, a friction flange or flanges, g, or any equivalent devices therefor, formed on or attached to the reservoir bottom, or to the stove or range top, as and for the purpose set forth.

76,911.—FIRE DETECTOR.—Wm. C. Grimes, Philadelphia, Pa. Antedated April 18, 1868.

I claim a series of tubes converging from several apartments of a house to one apartment, and adapted for the transmission of aeriform fluids to this center, substantially as shown and described, and for the purposes set forth.

76,912 —ROOT CUTTER.—J. Heberling and Wm. L. Heberling, Mount Pleasant, Ohio.

We claim, 1st, The knives, H, or their equivalent, substantially as described and for the purpose set forth.

2d, The oblique curved slots, e', having an offset directly beneath the forward part of the knives, F, to prevent clogging, the concave and convex sides of which curves bend or turn toward the stationary cutting knives used in connection therewith, as seen at, e', fig. 1, all strips or slices that pass through.

3d, The projecting cutters, G, or their equivalent, for the purpose specified.

4th, The combination of the projecting cutters, G, knife, F, curved slots, e', and knives, H, as shown, and for the purpose specified.

5th, Such a regular inclination of the surface of the knives and the periphery of the cylinder, from the edge of each knife to the one next in its rear, as to bring the said surface within the edge of it a sufficient distance to constitute the throat.

6th, The hollow metallic cylinder, E, having rimmed ends, one of which is open, inclined periphery, oblique curved slots, e', substantially as shown and described.

76,913.—MODE OF CHURNING BUTTER.—Isaiah Herrick, Merrimack, N. H.

I claim the dashers, E E', constructed as described, in combination with springs, O O', steps, F F', cog wheels, B B', pinion, C, standards, H H', journal box, G, shaft, A, and crank, V, arranged substantially as and for the purpose set forth.

76,914.—LEATHER POLISHING MACHINE.—J. W. Hildreth, Boston, Mass.

I claim, in a machine such as described, the combination, with the yielding bed upon which the leather is placed, of the vibratory lever to which the glassing-tool holder is attached, provided at its point of suspension with an elastic and yielding bearing, substantially in the manner and for the purpose herein shown and set forth.

76,915.—FRUIT JAR AND CLAMP.—A. J. H. Hilton, Boston, Mass. Antedated March 10, 1868.

I claim the angular clamp, G, with its jaws, a a, in combination with the inclined planes, F F, of the cover, C, the rubber packing ring, and the straight shoulder, B, of the jar, A, all as specified.

76,916.—CROCHET NEEDLE.—J. M. Hoadley, Birmingham, Conn. Antedated April 8, 1868.

I claim, 1st, The holder, B, for crochet needles, formed, with the needle, A, from the same piece of tempered wire, as herein shown and described.

2d, The holder, B, for crochet needles, formed of tempered wire, upon which

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the needle is arranged to slide and be held in position by the elasticity of said holder, as herein shown and described.

76,917.—FRUIT CAN.—L. E. Holden, Cleveland, Ohio.

I claim the combination of the pipe, B, tube, D, and stopper, C, as and for the purpose substantially as specified.

76,918.—GATE LATCH.—G. B. Howland, Gardner, Ill.

I claim the peculiar construction of the drop latches, and their attachment to the middle piece, b, as shown in fig. 2, thereby securing an unobstructed space immediately above the latches, so that the gate may be opened, as herein described, without necessarily involving a spring or unnecessary weight of iron, in connection with the bar or stop on the gate, either of which is more expensive and inconvenient to operate.

76,919.—FRAME FOR STRETCHING PANTS.—J. H. Hulse, Baltimore, Md. Antedated April 8, 1868.

I claim the combination of the upright, a, with a cross-supporting piece, c, with the hinged stretcher, b c, and adjustable supporting cross pieces, f d, the whole arranged as herein described and for the purpose specified.

76,920.—GATE.—H. Hunt, Delavan, Wis.

I claim, 1st, The concave convex track J, arranged for the rollers, M L, to run on its opposite sides, in combination with the straps, V, and gate, F, substantially as and for the purpose set forth.

2d, The combination of track, J, cords, R, straps, V, pulleys, S T. box, W, and gate, substantially as set forth.

76,921.—LAMP SHADE.—S. W. Huntington, Augusta, Me.

I claim a lamp shade clasp or clamp, struck up from a single piece of sheet metal, in the manner herein described, so that one end of the clasp shall be provided with a spring tongue or clamp, bent in the manner specified, for holding the shade, and the opposite end with a hook and arms for maintaining the clasp and shade in position upon the lamp chimney or globe, substantially as shown and set forth.

76,922.—BASE-BURNING STOVE.—F. H. Husted, Buffalo, N.Y.

I claim, 1st, Forming the central combustion space, f, by means of the passage, a, and deflecting plate, b, or their equivalents, substantially in the manner and for the purposes shown and described.

2d, Dividing the combustion chamber surrounding the magazine into vertical flues, by the magazine itself, of the form described, or by the hinged plates, d d, provided with operating rods, n, or equivalent, substantially in the manner and for the purpose specified.

3d, The magazine, D, provided with deflecting plate, b, and semi-annular discharge aperture, a, or equivalent, and arranged so as to form an enlarged flue, E, in front, in combination with the oven, F, arranged and operating substantially as set forth.

76,923.—FUMIGATOR.—Richard Kerr, Boston, Mass. Antedated April 14, 1868.

I claim a fumigator arranged for employment with a piston syringe, when provided with the grate, c, and the outer removable end, a, substantially as and so as to operate in the manner described.

76,924.—WASHING AND WRINGING MACHINE.—G. W. Kintz, West Henrietta, N. Y.

I claim the combined washing and wringing machine, having the conical crimping rollers, E E', standing in opposite directions to produce a crimping of the cloth, and provided with the intermediate ribs and scoops, d f, and having the wringing rollers, G H H, so arranged as to intermatch and graduate the pressure, the whole operating as described and for the purpose specified.

76,925.—BLAST GUN.—C. Kirchhof, Newark, N. J.

I claim, 1st, The combination of a sheet or plate, h, made of the material as herein described, with an apparatus for compressing air or gas, when said sheet or plate is secured hermetically to the latter, by means of an arrangement allowing a speedy removal and restoration of such sheets, in the manner and for the purpose specified.

2d, The peculiar construction and connection of the parts, b f g, of the device, for securing the sheet, as set forth.

3d, The extension, p and o, made in the manner and for the purpose specified.

76,926.—SCREEN CYLINDER FOR COTTON PICKERS.—R. Kitson, Lowell, Mass.

I claim a cylinder surface, which is more or less raised or depressed between the perforations, substantially as shown and described, and for the purpose or purposes specified.

76,927.—LIFTING JACK.—John Kohler, New York city.

I claim the lever, A, pawls, C G, and pawl disengaging pin, H, in combination with the ratchet wheel, D, pinion, E, and rack, F, substantially as and for the purposes set forth.

Also, the slot, I, and pin, i, all operating together, as shown and described to form a new and improved carriage jack.

76,928.—CHURN.—Joseph Liebhaber, Bless, Bavaria.

I claim the combination of four or more beaters of different construction, for the purpose above set forth and described.

76,929.—CONDENSER.—Wm. A. Lighthall, New York city.

I claim arranging the exhaust pipe from the engine, with its series of openings, as shown, in relation to the vacant space between the series of tubes, as and for the purpose herein set forth.

76,930.—FRAME FOR WINDOW SCREENS.—C. F. Linscott, Woburn, Mass.

I claim the clasp, B, made of sheet or cast metal, and attached to the inner corner of a frame, for the purpose of securing the sides of the frame together, substantially as set forth.

76,931.—GATE.—Frank Livingston, Marathon, N. Y.

I claim the bar, F, hinged and pivoted as described, in combination with the gate and sliding hinges, D D, for the uses and purposes set forth.

76,932.—HORSE RAKE.—S. P. Mecay, Killbourne, Ohio.

I claim, 1st, The handle, H, when pivoted to the frame, and provided with an adjustable shoulder, j, and hook, l, for the purpose of regulating the double rake head, D, as and for the purpose specified.

2d, The double rake head, D, provided with S-shaped slots, x x, in the cross heads thereof, and having spurs, m m, secured therein, in combination with handle, H, and frame, A, as and for the purpose specified.

76,933.—PUMP PISTON.—F. P. Michel, Rochester, N. Y. Antedated April 14, 1868.

I claim the construction of the hollow piston, A, with the ribs, f f, and hook, h, for the ready insertion and removal of the valves, the whole arranged and operating in the manner and for the purpose specified.

76,934.—CONSTRUCTION OF ICE PITCHER.—F. J. Miller, Brooklyn, N. Y. Antedated April 10, 1868.

I claim an ice pitcher, having the walls, c a, and bottoms, d b, and lower rim or base, e, constructed substantially as shown and for the purpose set forth.

76,935.—METHOD OF PREPARING LAUNDRY BLUEING.—E. L. Molineux, New York city.

I claim, 1st, Forming the article called laundry blueing into sticks or fingers, and thus preparing it for sale and use, substantially as described.

2d, Combining laundry bluing with starch, sugar, or other soluble glutinous or saccharine substance, thereby diluting it and improving it for use, whether the same be formed into sticks or fingers or not.

76,936.—MACHINE FOR CUTTING BUNGS.—James H. Murrill (assignor to himself, Lewis R. Keizer, and Jacob Seeger), Baltimore, Md.

I claim, 1st, The arrangement of the collar, with its spring feeders, G G, that lie in the slots of the cylinder, E, and are operated to carry the stick through the cylinder after being rounded by the cutters, substantially as specified.

2d, The wheel, K, provided with the slides, a a, and placed on the end of the cylinder, E, for griping the stick while the bung is being formed, substantially as specified.

3d, The arrangement of the sliding frame, L, with shafts, T and M, placed opposite to each other, one provided with the cutters, T and u, and the other with the saw, N, whereby the bung is formed, cut from the stick, and dropped, in the manner substantially as specified.

4th, The arrangement of the adjustable rod, Q', supported by the bars, f l, and in combination with the inclined bar, R, on the end of frame, L, whereby the bung is held and dropped, the whole arranged to operate substantially as specified.

76,937.—SPINDLE BOLSTER.—G. H. Noble (assignor to himself and B. T. Mills), Lowell, Mass.

I claim the divided and tapering or conical bushings or linings, combined with a spindle bolster, as described, the said bolster being provided with one or more oil-passages, c, and a dishing top, to receive and convey the lubricating substance to the oil space, b, and the spindle, in the manner and for the purpose specified.

76,938.—LOCOMOTIVE COW CATCHER.—James Noble, Pittsburgh, Pa.

I claim, 1st, The construction of a locomotive cow catcher, consisting of a revolving cylinder or cylinders, with face or faces serrated or toothed, and so connected with the forward locomotive truck as to receive the motions described, and operate substantially as and for the purposes hereinbefore set forth.

2d, An apron, n, extending from some fixed part of the locomotive forward over a revolving cylindrical cow catcher, g, substantially as and for the purposes herein set forth.

76,939.—CASTING MOLD BOARD.—James Oliver, South Bend, Indiana.

I claim, 1st, A chill, provided with core seats or recesses, e e e, substantially as described and for the purpose set forth.

2d, In combination with the core seats, e e e, the chamber chill, C, substantially as described.

76,940.—SCORING GAMES.—William B. O. Peabody, Boston, Mass.

I claim, 1st, The series of changeable, differently-marked dials, in combination with the scoring and registering apparatus, as set forth.

2d, The box, A A, formed in two equal parts, and containing the duplicate sets of changeable dials and indicating apparatus, as and for the purpose specified.

76,941.—BAG FASTENER.—G. H. Peacock, Fairport, N. Y.

I claim the band, A, composed of metallic cord, in connection with the clasps, B B, end fastenings, C D, arms, E E, and ears or projections, F F and G G, all arranged to operate as herein set forth.

76,942.—RAILROAD RAIL.—L. B. Prindle, Litchfield, Mass.

I claim a continuous reversible rail, with its accompanying chair and key, constructed substantially as herein set forth and described.

76,943.—OPERATING FERRY BOAT.—E. W. Quincy and Wm. Fisher, Lacon, Ill.

We claim a ferry, or other boat, provided with flanged drums, a a' a'', arranged with reference to the prevention of the abrasion of the parts of the draft rope upon each other, in the manner described.

76,944.—LIFTING APPARATUS.—Frank W. Reilly (assignor to himself, George F. Root, Ebenezer T. Root, and Chauncey M. Cady), Chicago, Ill.

I claim a lifting apparatus, constructed substantially as described, consisting of two adjustable vertical rods, projecting above a table on which the patient stands, connected with suitable mechanism beneath the table for carrying the weights used.

76,945.—LAMP BURNER.—F. S. Robinson, Boston, Mass.

I claim, 1st, In combination with the deflector, G, the spring points, e, for the purpose of supporting the deflector by entering grooves or recesses in the chimney prepared to receive them, as described.

2d, Confining the chimney and centering it by means of centripetal holders, constructed and operating as set forth.

3d, The combination and arrangement of the slide, J, levers, K L, sliding holders, M, and springs, N, in the manner and for the purpose specified.

66,946.—BRICK KILN.—Robert Robson, Buffalo, N. Y.

I claim, 1st, The combination and arrangement of a series of kilns, A B C, etc., with a central area, G, and passage way or ways, H I, for supplying and removing the bricks and tile, substantially in the manner set forth.

2d, The furnaces, n, bridge wall, p, and connecting flue, J, and chimneys, S, arranged substantially as herein described.

76,947.—CIRCULAR SAW TABLE.—George H. Sanborn, Boston, Mass.

I claim the spring bar, L, in combination with the grooved slats, K, arranged and operating as described.

76,948.—WATER VESSEL FOR FIRE-PROOF SAFE.—R. S. Sanborn, Ripon, Wis.

I claim a water vessel for steam fire-proof safes, suspended to the wall of the safe, substantially in the manner and for the purpose specified.

76,949.—PEG CUTTER.—D. B. Sanderson, Lewiston, Me.

I claim the arrangement of the tongue, f, plate, d, arm, h, and helix, k, in the manner herein illustrated and described, upon and in combination with the curved stock, a, as and for the purposes set forth.

76,950.—SEWING MACHINE.—A. H. Sherwood, Southport, Conn. Antedated April 16, 1868.

I claim the combination of disk, J, pin, L, with the shuttle-carrying arm, D' and rocking arm, B, provided with curved slots, N M, the whole operating substantially as and for the purpose set forth.

76,951.—MACHINE FOR ROUNDING THE CORNERS OF SLATE FRAMES.—Edward Snyder (assignor to himself and Morgan Jones), Slatington, Pa.

I claim the curved guides, d1 d2, and pins, a1 a2, or their equivalent, arranged and operating relatively to the cutter, C, and carrier, D, substantially as and for the purposes herein set forth.

76,952.—TEETH FOR HAY SPREADERS.—George A. Squier, Syracuse, N. Y.

I claim the fork head, A, made in sections, A a, for securing the tines, and having serrated joints, f, as herein shown and for the purpose described.

76,953.—MACHINE FOR HARVESTING POTATOES.—O. S. St. John and T. C. St. John, Willoughby, Ohio.

We claim, 1st, The use of the elongated flat knife or blade, J, and straps, R R, constructed substantially as described, located and operating in the especial manner herein set forth and for the purpose stated.

2d, The employment of the detachable drag separator herein described, having the two outer arms rigid and the intermediate ones vibratory, so as operate in the manner described, and in connection with the said knife, J, as and for the purpose set forth.

3d, The special use and employment of the extra attachment herein described, constructed and operating substantially as and for the purpose stated.

4th, The combination of the said drag separator and the said extra attachment, operating in the manner and for the purposes set forth.

5th, The plows, K and K', in combination with the broad knife, J, operating as and for the purpose herein stated.

6th, The levers, A A', connecting rods, B B', forked rods, C C', plow standards, D D', rods, E E', guide plates, F F', provided with catch holes, G G', swing bar, H, and pawls, I I', in combination with the knife, J, or with the extra attachment, drag separator and plows, K K', all constructed and operating substantially in the manner and for the purposes herein set forth.

76,954.—HAY HOISTING DRUM AND GRAIN FORK.—Henry Strickler, Borough of Carlisle, Pa.

I claim the extension, f, of the lower ratchet, f', operating with the arm, h, and the pulley, w, and the rope, w', for the purpose of enabling the person working the hook or fork on the loaded wagon therefrom to unshift the drum.

2d, The beveled cog wheel, m, fastened on the upper outer face of the drum, g, the beveled cog wheel, n, the arm, o, the spur cog wheel, p, the spur cog wheel, q, the arm, r, the arm, s, the fork, u, and the inclined plane, v, all combined and operating in the manner and for the purpose herein set forth.

76,955.—MACHINE FOR MAKING AUGER BITS.—James Swan, Seymour, Conn.

I claim, 1st, The holding jaws, J J', attached to the sliding plate, I, in combination with the slides, G G' G'', provided with the dies, c f h, all constructed and arranged to operate in the manner substantially as and for the purpose set forth.

3d, The combination of the holder, J J', constructed as described, in combination with the operating parts thereof, as herein shown and described.

76,956.—AUGER HANDLE.—James Swan, Seymour, Conn.

I claim the cylindrical key, C, within the handle, A B, provided at its front end with the V-shaped groove, g, and upon its under side with the longitudinal groove, e', fitting over the lug, f, in the socket, a, and having at its rear end the circumferential groove, d, fitting over the lugs, b, upon the part B of the handle, all constructed and operating as described, whereby as the parts A B are screwed together, the key, C, is operated longitudinally, to clamp the shank of the auger, as herein set forth and represented.

76,957.—PROCESS FOR TANNING.—Dexter Symonds, Marlow, N. H.

I claim, 1st, The process substantially as described of producing or obtaining from bark or other substances liquid for tanning hides and skins.

2d, The application of such liquid to hides or skins to be tanned.

3d, The liquid herein described as a new production for tanning purposes, when produced or obtained by the process described.

76,958.—DIE FOR MAKING CLOCK COLLETS.—Hiram C. Thompson, Bristol, Conn.

I claim the combination and arrangement of the dies, E e, gage pin, F, and back gage, G, arranged and operating on the base plate, substantially as described.

76,959.—SHIFTING RAIL FOR CARRIAGE SEATS.—Samuel Toomey, Wilmot, Ohio.

I claim the projection, G, on the inner side of the bracket, a, at the inner edge of the mortise, in combination with the gib, C, and wedge, d, substantially as and for the purpose herein specified.

Also, in combination with the gib and wedge fastening at the front, the square hook tenons, g g, and shoulder, f, bearing with a spring pressure upon the brackets, b b, substantially as and for the purpose herein set forth.

76,960.—INSULATOR FOR TELEGRAPHS.—Cromwell Fleetwood Varley, New York city.

I claim, 1st, The use of petroleum or paraffine oil, coal tar naphtha, or paraffine wax, for renovating the insulating power of surfaces rendered defective by age, exposure or other cause, as set forth.

2d, The use of the above named materials for increasing the insulating power of porous or otherwise imperfect insulators, as set forth.

76,961.—FEED WATER HEATERS FOR BOILERS.—Charles Webster, New Haven, Vt.

I claim an apparatus for heating the feed water of a steam generator, combining the following elements, viz., a tank, B, and a system of pipes connecting it with a heater, G, so arranged that the latter may be adjusted in its position in the fire box, substantially as set forth.

76,962.—TRAVELING BAG.—Charles A. Wellington, East Lexington, Mass.

I claim in combination with the jaws, b c, the hooks, d, each hinged at one end to the jaw, b, and having at its opposite end the bend, f, and tooth, g, the tooth entering the socket or recess in the jaw, c, to confine the jaws together substantially as described.

Also, the stationary staples or eyes, l, riveted to the metal jaw frame, substantially as described.

76,963.—GATE.—Geo. W. Winterringer, Fredericktown. O.

I claim the combination and arrangement of the beveled angles, E and F, of the box, C1, and slotted shaft, D, operated by the forked or straight lever, G', substantially as and for the purposes herein described and set forth.

2d, In combination with the above, the springs, m, or their equivalent, the flattened and oblong head of the bolt, h, the operating lever, G', all arranged and operated substantially as and for the purposes herein described and set forth.

3d, In combination with the above, the weight, H, arranged and operating as described, for the purpose of closing the gate, as specified.

76,964.—CORN PLOW.—Joseph Wolf, Young America, Ill.

I claim, 1st, connecting the forward ends of the beams, C C, to the axle, A, by means of metallic loops, so that said ends can be shifted, while the rear ends can be adjusted, substantially as and for the purpose set forth.

2d, The arrangement of the axle, A, with the beams, C C, which are loose at their rear ends, and with the tongue, F, as and for the purpose set forth.

3d, The arrangement of the draft bars, H H, with the axle, A, and tongue, F, as and for the purpose set forth.

76,965.—ELECTRO-MAGNETIC VALVE GEAR.—Edwin A. Wood, Utica, N. Y.

I claim, 1st, The use of the electro-magnet, one or more, for connecting and detaching the cut-off, or governor valve or valves of a steam engine, with and from the power which operates such valve or valves, as described.

2d, The use of the governor and electro-magnet, one or more, in combination with the inlet cut-off or governor valve or valves of an engine, for the uses and purposes mentioned.

76,966.—LAMP BURNER.—John R. Ackerman, Edward B. Campbell and Niram O. Golden, Dobb's Ferry, N. Y.

We claim the arrangement of the perforated cylinder, D, with relation to the open-bottomed cone, C, conical top, E, and wick tube, A, as herein described for the purpose specified.

76,967.—LIFTING JACK.—G. H. Alger, Ames, N. Y.

I claim the arrangement of the uprights, C, rack, B, base, D, crosspieces, G G', lever, A, link, g e, lever catch, b, and lifting toe, E, all constructed and operating together substantially as and for the purpose as shown and described.

76,968.—BED BOTTOM.—John Allen, Pughtown, Pa.

I claim the bed bottom constructed of inelastic bands or strips, jointed together in thines, crossing each other in the middle, as shown, being supported by rings upon the rails of the bedstead, and stretched sidewise by the bands, 1 2, 3 4, and 7, the whole constructed in the manner and for the purpose above set forth and described.

76,969.—MODE OF HANGING RECIPROCATING SAWS IN SAWMILLS.—Emanuel Andrews, Williamsport, Pa.

I claim hanging reciprocating saws, so that the strain may be adjusted to any desired part by hooks and stirrups, with circular lips, when made and arranged substantially as and for the purpose set forth.

76,970.—EGG BEATER.—Wm N. Angus, Morristown, N. J.

I claim the screw or spiral threaded shafts, A and L, cog wheels, i and j and the nut, D, in combination with an egg beater, constructed, arranged and operating substantially as described and for the purpose set forth.

76,971.—CORN PLANTER.—Aaron Armstrong, Gillespie, Ill.

I claim the foot lever, F, connected or applied to the draft pole, B, to operate in the manner substantially as and for the purpose set forth.

76,972.—MILLSTONE EXHAUST.—David Baird, Bloody Run, Pa.

I claim, 1st, In an exhaust for millstones, the separator, I, when constructed with horizontal interlocking shelves, i i', arranged substantially as and for the purpose set forth.

2d, Collecting the condensed moisture that may be deposited in the exhaust, or in any of the air chambers or passages, by means of a set of cups or receivers, m m, n n.

76,973.—RAILWAY SWITCH.—A. F. Ballas, Pottstown, Pa.

I claim, 1st, The switch tongues constructed as described, with their points lower than the tread of the rails, A B, and adapted to fit against the web and below the tread of said rails, free from contact with the tread of the car-wheel, as herein described, for the purpose specified.

2d, In combination with the above, the counter weight, constructed and arranged to operate as herein described, for the purpose specified.

3d, In combination with the tongues, C, and counter weight, F, the revolving target, P, and gearing, O, operating substantially as described for the purpose specified.

76,974.—PURIFYING OIL AND FAT.—Richard C. Barton, Brooklyn, N. Y.

I claim, 1st, Purifying fat and oils, and decomposing them, to separate them from impurities and from gelatinous matter, by means of ferment or protein, as set forth.

2d, The process herein shown and described of treating oils and fats for purification, and for separating impurities.

3d, The process herein shown and described of treating stearic acids.

4th, The apparatus herein shown and described, consisting of the tanks, A and B, and of the agitator, C, all made as set forth, for the purpose of treating fats and oils in the manner specified.

76,975.—HORSESHOE MACHINE.—Hazen J. Batchelder and Geo. E. Woods, Marlboro, Mass.

We claim the combination and arrangement of the recess, b, with the carriage, B, bender, A, and rollers, E E, formed and arranged substantially in the manner and so as to operate as described.

Also, the combination and arrangement of the cutting shears, n, o, the stop gage, p, the bender, A, and rollers, E E, and the discharging recess, b, the whole being to operate as set forth.

Also, The combination as well as the arrangement of the auxiliary nail hole punch, u, and its operative lever, v, with the bed, s, and the main nail hole punch, r, and its operative lever, G.

Also, the combination of the gage, t, the bed, s, the creasing punch, and the lever, G.

Also, the combination of the cammed lever, w, with the one or more punches, arranged to operate with a bed, s, in manner as described.

76,976.—BEEHIVE.—Edgar B. Beach, West Meriden, Conn.

I claim the combination of the outer case, C, with the inner case, A, when the inner case is provided with a frame case, E, and so as to be removed from the case, A, and so as to be closed by the outer case, C, substantially as and for the purpose specified.

76,977.—SUSPENDER FOR STOVE HANDLE, ETC.—Sewell G. Thayer, administrator of the estate of Daniel N. Beard, deceased, Cleveland, Ohio.

I claim the wheel, B, when provided with guide, g, the swivel screw, C, spring, D, and cord, E, as and for the purposes specified.

76,978.—WHIFFLETREE HOOK.—Francis W. Beckwith (assignor to himself and Smith, Clark & Co.), Westmoreland, N. Y.

I claim the circular spring band, a, held against the end of the thimble by the bead, g, and the tongue, h, having the projection, i, pivoted between the lugs, m, all constructed, arranged and operating as described, whereby the spring is compressed at each outward and inward movement of the tongue, and the latter held either open or closed by the outward expansion of said spring, as herein described for the purpose specified.

76,979.—LAMP BURNER.—G. A. Beidler, Philadelphia, Pa.

I claim, 1st, The rarefying conductor, B, made substantially as shown and described.

2d, In combination with the rarefying conductor, B, the conical deflector, A, substantially as shown and described.

76,980.—HAY FORK.—Henry F. Bemendefer and Dwight H. Finch, Attica, Ohio.

We claim the fork, A, with the shank, B, arranged with the catch bar, D, and handle, E, the parts being constructed and operating as and for the purpose set forth.

76,981.—WINDOW SASH LOCK.—W. H. Betts, Brooklyn, N.Y.

I claim the divided under cut or dove tail slide, b c, in combination with the sliding locking piece, b, the parts being constructed and applied substantially as set forth, to form a sash fastener.

76,982.—FEATHER DRESSING MACHINE.—Samuel W. Bevans (assignor to himself and George A. Munson), Plymouth, Conn.

I claim in a feather dressing machine attaching a discharge tube in or near the center of the bilge or cylinder, substantially as and for the purpose described.

76,983.—DEVICE FOR TURNING NUTS.—Byron Boardman (assignor to himself and Frank Douglas), Norwich, Conn.

I claim, 1st, The adjustable ring, A, with projections, B B B B, when used for the purpose specified.

2d, The combination of the arbor, C, with ring, A, substantially as herein specified.

76,984.—THILL COUPLING.—C. S. Bonney, Penn Yann, N. Y.

I claim, 1st, The construction and arrangement of the parts, A and D, screw, E, when made and used as and for the purpose set forth.

2d, The part, B, with the channel, H, to prevent the screw E, from turning when made and applied to the part A, substantially as herein specified.

76,985.—TUBE WELL.—Adam S. Brown, Lebanon, Pa.

I claim, 1st, The outer wall or casing, C, of a tube well, constructed of twisted wire cables, g, arranged, secured and braced substantially as described.

2d, One or more annular perforated and flaring enlargements upon the inner tube, A, substantially as described.

3d, The rings or shields, h, in combination with a tube, A, which is constructed with annular perforated enlargements, and with an outer perforated or open work casing, C, substantially as described.

76,986.—SEWING MACHINE.—Charles E. Brown, East Randolph, Mass.

I claim the guide bar, F, provided with a slot, g, and pin, h, in combination with the collar, K, bolt, d, and the spring, R, when constructed and used substantially as and for the purpose herein set forth.

76,987.—TICKET HOLDER.—Smith M. Brown and Harvey J. Brown, Holly, Mich.

I claim the ticket holder constructed as described, consisting of the plate, A, having its sides, a a, and lower end, b, bent in toward and parallel with the face of the plate, whereby a channel is formed between said sides and plate for the passage of the ticket, which is clamped therein by the lip c, said holder adapted to be secured to the ends of a hat band by means of the rings, C C, held in the plate, A, by the bent slides, a, all arranged as herein described for the purpose specified.

76,988.—POCKET BOOK AND FAN COMBINED.—Otto Bruck, New York city.

I claim a fan and pocket book combined, as a new article of manufacture.

76,989.—QUARTZ CRUSHER.—Andrew Buchanan, Brooklyn, N. Y.

I claim, 1st, The connecting straps, F, in combination with the crushing jaws, E G, substantially as and for the purpose described.

2d, The rockers, H, in combination with the jaws, E G, constructed and operating substantially as and for the purpose described.

3d, The balance springs, J, in combination with the jaws, G, constructed and operating substantially as and for the purpose set forth.

76,990.—CLOTHES DRYER.—David M. Buckley, Athens, O.

I claim a clothes dryer constructed with a shaft, B, cords, D and E, and parallel bars, F F', arranged substantially as described.

76,991.—FERTILIZER.—W. G. Busey, Georgetown, D. C.

I claim the fertilizer formed by the combination and manner of combination of the several specific materials, substantially as herein set forth.

76,992.—STEAM SAFETY VALVE.—Albert G. Buzby, Philadelphia, Pa.

I claim the two valves, B and B', the former being connected to but loaded independently of the valve, B', when the said valves are contained within a casing, substantially as and for the purpose herein set forth.

76,993.—PRINTING TELEGRAPH.—Edward A. Calahan, Brooklyn, N. Y., assignor to the Gold and Stock Telegraph Co., New York city.

I claim, 1st, A magnet for giving or controlling the impression, placed in a main electrical circuit, that is separated from the circuit that controls the type wheel or denoting device, so that the impression can be made independently of any other operation, when the type wheel or denoting device has been properly moved, substantially as set forth.

2d, Two or more type wheels, separately controlled by magnetism, and arranged side by side, or with their axes on the same line, so as to be impressed jointly or separately, on one strip of paper, substantially as and for the purposes set forth.

3d, The combination of the type wheels, k and l, magnets, f and i, with the magnet, c, and impression roller, u, or its equivalent, substantially as and for the purposes set forth.

4th, The reverse ratchet wheel, q, and pawl arm, r, in combination with the ratchet wheel, p, and pawl, 5, for moving and holding the type or character wheel, substantially as set forth.

76,994.—BOTTLE STOPPER.—Sheldon Cary and Spencer C Cary, New York city.

We claim as a new article of manufacture, a bottle stopper provided with a cap, B, of metallic foil, and a flat plate, C, which projects over the edges of the stopper, whereby said stopper is prevented from being forced too far into the neck of the bottle, as described.

76,995.—NUT FASTENER.—James Christy, Philadelphia, Pa. Antedated April 14, 1868.

I claim the wire, D, bent, secured, and applied to a nut, or to a bolt or screw head, substantially as and for the purpose described.

76,996.—AUTOMATIC FLY BRUSH AND FAN.—Elijah J. Clark, Kalamazoo, Mich.

I claim the arrangement of the shaft, h, cam, l, and looped rod, F, in combination with the shaft, j, rods, f f, and fans, H H, all constructed and operated as and for the purposes set forth.

76,997.—SPOOL STAND.—Nicholas P. Clarke (assignor to himself and Chas. E. Griffin), Central Falls, R. I.

I claim the spool stand constructed as described, consisting of the revolving spool carrying plate, C, provided with upturned radial arms, a b, having tubes, c, the fixed right-angular plate, F Fx, pivoted knife, G, and operating spring arm, H, all arranged and operating as described and for the purpose specified.

76,998.—APPARATUS FOR RELIEVING CHOKED ANIMALS.—George Clump, Hamden, assignor to himself and Wm. Enerle, New Haven, Conn.

I claim the herein described apparatus, consisting of the tube, A, provided at one end with the mouth, B, or bulb, C, or with one at each end of the tube,

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so as to operate substantially in the manner and for the purpose herein described.

76,999.—BEEHIVE.—A. F. Cobb, Chapel Hill, Mo.

I claim a beehive constructed of metal and having its inner surface coated with plaster of Paris and beeswax, substantially in the manner and for the purpose herein described.

77,000.—TUBE WELL.—Charles H. Colby, Lynn, Mass.

I claim a tubular well with strainers set in screw disks or plugs, the perforations flaring inwardly, all constructed and applied as herein set forth.

77,001.—BILLIARD AND DINING TABLE.—Hugh W. Collender, New York city.

I claim, 1st, The elevating mechanism, substantially such as herein described, in combination with a billiard table bed which is convertible, so that it can be used for playing billiards or for dining or other uses, as described.

2d, The combination of the elevating mechanism, the movable or outer bed frame, d, and the reversible bed, m, substantially as and for the purpose described.

3d, The combination of the elevating mechanism, the outer or bed frame, d, the bed, m, or the equivalent thereof, and the adjustable pieces, c, of the legs, substantially as and for the purpose described.

5th, The combination of the spirit levels with the angle sight plates, substantially as and for the purpose described.

77,002.—METHOD OF TIGHTENING TIRES.—S. W. Corbin (assignor to himself and J. B. Sands), Vallonia Springs, N. Y.

I claim, 1st, Tightening the tire, having one end secured in the fellies by means of the block, C, formed upon the opposite end of the tire, having an inclined side, J, the rebated slot, E, in the felly, the T-shaped block, F, block G, and plate, D, all constructed, arranged, and operating as herein shown and described.

2d, The slot, E, and blocks F, and G, and plate or strap, D, substantially as and for the purposes set forth.

77,003.—VENTILATOR.—W. O. Crawford, North Star, Pa.

I claim the arrangement within the portable case, A, of the bellows, C C, being opposite to each other within said case, and surrounded by the pipes, D F, said bellows being operated from the central clock work by means of the pitmen, f f, as herein described, for the purpose specified.

77,004.—CHEESE TURNING COVER.—Q. C. Culley, Ashtabula, Ohio.

I claim the cover, A, provided with a rim or flange, F, projecting from each side, in the manner as and for the purpose specified.

77,005.—SHUTTER FASTENING.—Amos Cutter, Chelsea, Mass.

I claim the arrangement upon the side of the lower bar of a blind, of arms, a a', jaws, m m, spring, d, pivot, b, staple, g, and hole, f, for a blind catch, in combination with the two horizontal spikes, c, one driven into the wall of the house and the other into the window sill, so that said catch shall operate to hold the blind, when either open or closed, by one set of jaws, in the manner herein set forth.

77,006.—TENDER FOR HEATING AND DELIVERING METAL BARS.—S. A. Darrach, Newburg, N. Y.

I claim, 1st, The arrangement of a revolving furnace, A, provided with holes, b, in its sides, and covered with a bonnet, D, in combination with the mechanism described for introducing and removing the bars, substantially as and for the purpose described.

2d, The devices herein described for giving to the feed box, I, containing the blanks, a transverse shaking motion, substantially as and for the purpose set forth.

3d, The latches, s t, and pins, s' t', in combination with the jaws, o, wedge, r', slides, p r, and revolving firepot, C, all constructed and operating in the manner and for the purpose herein shown and described.

77,007.—VENTILATOR FOR HATS.—Geo. Deas, New York city.

I claim a ventilator for hats formed of the elastic adjustable bands, B and E, connected together by springs, with an open space between them, each being adjustable, the outer one to the size and shape of the hat, and the inner one to the size and shape of the head, substantially as herein shown and described.

77,008.—MUCILAGE BOTTLE.—David Wm. De Forrest, Brooklyn, N. Y.

I claim the shape of the mouth and neck of the bottle, in combination with the bulge forming the shoulder, substantially in the manner and for the purposes as herein described.

77,009.—SEEDING MACHINE.—C. Deis, Canal Dover, Ohio.

I claim, 1st, The combination and arrangement of the rollers, B, foot, A', and share, B', in the manner as and for the purpose specified.

2d, The slides, H H', in combination with the box, C, when operated in the manner and for the purpose substantially as set forth.

77,010.—TOBACCO HAND TYING MACHINE.—David C. Dellinger, Russellville, Ohio.

I claim, 1st, The cylinder, A, having the slot, s, and the expanded end, in combination with the bed, E, and the guard, T, substantially as and for the purpose specified.

2d, The fork, B, when used in connection with a rotating cylinder, A, substantially as and for the purposes set forth.

3d, The block, G, when used in combination with a revolving cylinder, and when provided with a lever and spring, or their equivalents, by which it can be raised or lowered, substantially as and for the purposes set forth.

4th, The combination of the cylinder, A, gear wheels, a I, cord, u, weight, U, and treadle, M, substantially as and for the purposes specified.

5th, The hook, Q, in combination with the cylinder, A, substantially as and for the purposes specified.

77,011.—MACHINE FOR PREPARING WOOL, COTTON, ETC.—Alex. J. Deru, Heusy, Belgium, assignor to Simon Delize, Providence, R.I.

I claim, 1st, The combination of the case or hopper, A, with endless apron C, and adjustable partition, x, as and for the purpose set forth.

2d, The combination of the two cylinders, D and B, with the case and endless apron, C, arranged substantially as herein described and for the purpose set forth.

3d, The combination of the two brush cylinders, 1 and 2, the two reservoirs, O and c, and plate, Q, substantially as described and for the purpose set forth.

4th, The combination of the oiling apparatus, constructed as described, with the cylinders D and B, substantially as specified.

5th, In combination, the wool delivering or feeding mechanism, the oiling mechanism, the pressing and the bat or lap-forming mechanism, substantially as described and for the purpose set forth.

77,012.—MATERIAL FOR JOURNAL BOXES.—Patrick S. Devlan, Hudson City, N. J.

I claim, 1st, Forming the anti-friction material for lining journal boxes of the ingredients, in the manner, and by the means herein described, and cutting the same by dies or with punches into the required shape, as set forth.

2d, The lining for journal boxes composed of fibrous material impregnated with pulverized plumbago, soapstone, or other earthy matter fixed with a strong size, and rolled and cut by dies or punching into the required shape, substantially as herein shown and described.

77,013.—WOOD PLANING MACHINE.—Frank Douglas, Norwich, Conn.

I claim, 1st, Supporting the feed rollers, C C', upon a vibrating beam, D, which itself is supported by a sliding standard that permits it to be adjusted higher or lower, when constructed to operate substantially as and for the purpose described.

3d, The combination with the sliding standard, E, of the screw shaft, H, having the collar, or its equivalent, J, and operating in connection with the ring, K, lever, L, or its equivalent, and bevel gear, h, all constructed to operate substantially as and for the purpose specified.

3d, The pivoted arm, o4, when applied to the spur gearing, n n1 m m', and operating in connection with said gearing and with the arms, o o1 o2 o3, constructed to operate substantially as and for the purpose described.

4th, The removable bearing, r, when used in connection with the arms, o o1, in an adjustable gear, substantially as and for the purpose specified.

77,014.—MEAT CUTTER.—A. J. Eddy, New Britain, Conn.

I claim the shape and spiral arrangement of the shear cutters, q, arranged interchangably upon the shafts, k, in combination with the feeders, n n, arranged within a smooth inner surface case, with the gears, o'', substantially as and for the purpose described.

77,015.—HORSE POWER.—Rollin S. Eddy, La Crosse, Wis., assignor to himself, W. H. Smith, Seth Dean, and Henry Merrill.

I claim, 1st, In a horse power, the bevel wheels, h h' and n n', or their equivalents, when constructed and arranged as described, for the purpose of distributing and equalizing the strain throughout the gearing.

2d, The pin, m, and collars, i, or their equivalents, when constructed and arranged substantially as herein described and for the purpose set forth.

3d, The wheels, h h' and n n', arranged as herein described, on a shaft, H, and held in place by a collar on the shaft, in combination with the shaft or with a master wheel, N, in a horse power, substantially as described and for the purpose set forth.

4th, The use of a device for equalizing the strain in horse powers, consisting of two bevel wheels, h h', or their equivalents, arranged to run loose on a shaft, H, and in the same direction, and to mesh into two other corresponding bevel wheels, n n', or their equivalent, running loose on a pin, M, at right angles with the shaft, H, and attached to it, as shown in figs. 2, 3, and 6, or to bearings on a wheel, N, turning about a shaft, L, as shown in figs. 4 and 5, the whole being held in place by collars on said shafts, or their equivalents, and constructed and arranged to operate substantially as described.

77,016.—CARTRIDGE BOX.—John Elbertson, Kirksville, Mo.

I claim, 1st, the self-adjusting disk, E, for holding the cartridges of caps, when used in combination with an inclosing case, substantially as and for the purpose specified.

2d, The split nipples, n n, having their sides springing slightly apart, for the purpose of holding the caps, in the manner described.

77,017.—CENTRIFUGAL MACHINE FOR DRAINING SUGAR.—Walter Elmenhorst and Franz O. Matthiessen, Jersey City, N. J.

We claim in a centrifugal machine of the character described, and having no upper fixed bearing, the combination with the purging cylinder, A, and rubber or elastic bearing to the shaft, B, of a removable or adjustable bearing brace or tie to said shaft, so hung or arranged as that it may readily be thrown in or out of steadying support to the cylinder while the machine is in motion, essentially as and for the purpose or purposes herein set forth.

77,018.—DOVETAIL MARKER.—John Evans (assignor to himself and Thomas H. Smith), Philadelphia, Pa.

I claim, 1st, The within described instrument, consisting of the frame, A, with its marking edges, x and x', and the slide, B, with its marking edges, y and y', the whole being constructed, arranged, and operating substantially as and for the purpose herein set forth.

2d, The combination of the above with the adjustable plate, d.

77,019.—EXTENSION FIXTURE FOR CHANDELIERS.—John A. Evarts (assignor to Bradley & Hubbard), West Meriden, Conn.

I claim, 1st, The socket, B, combined with the lever, E, and shoe, C, and constructed so as to operate substantially in the manner herein set forth.

2d, In combination with the above, the adjusting box, F, to adjust the friction, substantially as and for the purpose set forth.

77,020.—MILK CAN COVER.—John Fandel, Boston, Mass.

I claim the combination with a milk or other can, of the hinged cover, B, the spring, S, and packing, b, substantially as and for the purpose specified.

77,021.—OIL OR POLISH FOR LEATHER.—Samuel M. Farnham, Tully, N. Y.

I claim a composition compounded from glycerin, resinous and other substances, substantially as and for the purpose set forth.

77,022.—METALLIC BASE AND MOLDING FOR HEATING PURPOSES.—Charles E. Finkle (assignor to himself and R. O. Glover), New York city.

I claim a metallic base of metallic molding for dwellings or public buildings, when constructed and used substantially as herein shown and described for the purposes specified.

77,023.—CARRIAGE SEAT.—H. H. Forbes and H. C. Sears, New Bedford, Mass.

We claim in combination with the seat of a carriage, the pivoted, crossed, and clamped legs, arranged to operate substantially as and for the purpose described.

77,024.—DITCHING MACHINE.—E. L. Foreman, Rantoul, Ill.

I claim the platform, C, in combination with the lever, F, and sides, A and B, when arranged and used as and for the purpose specified.

77,025.—METHOD OF FINISHING LEATHER.—Lawrence B. Fox, Williamsport, Pa.

I claim, 1st, The plane stock for finishing leather, with its two sleeks and circular knife, as described and shown.

2d, In combination with the plane stock as described, the adjustable table, constructed and operated as shown, and for the purposes set forth.

3d, The combination and arrangement of the several parts composing my finisher, when used for the purposes already stated.

77,026.—MANUFACTURE OF TABLE FORKS.—James D. Frary, New Britain, Conn.

I claim the fork, A, punched or cut entire from sheet steel, substantially as described, as an article of manufacture.

77,027.—HYDRANT.—Benj. G. Fuller, Baltimore, Md.

I claim the combination with the air chamber and the piston cylinder of the hydrant, of the valve and herein described valve mechanism, operated by but not attached to the piston head, and held within a tube or case, constructed and connected with the said air and piston cylinders and chambers, in the manner and for the purposes shown and specified.

77,028.—WATCH KEY.—Henry Ganney, Louisville, Ky.

I claim the combination of the head piece, D, with its spring, E, spindle, A, having one or more studs, C, substantially as and for the purpose described.

77,029.—SHOE LACER.—D. A. Gilbert, Morrisville, Vt.

I claim the lacer, A, as an article of manufacture, when made with the end of its hook turned under, in the form shown and described, and used as and for the purpose herein specified.

77,030.—BUTTER TUB.—D. A. Gilbert, Morristown, Vt.

I claim the bars, B B, constructed as described, and used in combination with the cover, C, packing, a, and ridges, e e, as and for the purpose set forth.

77,031.—STEAM PLOW.—N. A. Gray, Cleveland, Ohio.

I claim, 1st, So hanging or jointing the digging apparatus to the locomotive that the said apparatus will have an independent adjustment, whereby it is rendered adjustable according to the unevenness of the ground, in the manner and by the means substantially as set forth.

2d, The stay, I, rod, H, and arm, J, arranged in relation to the digging apparatus, as and for the purpose set forth.

3d, The arm, J, cross head, K, spades or picks, L M, and keys, R, arranged in the manner and for the purpose substantially as specified.

4th, The construction and arrangement of the spades and picks when combined with the compound crank, and operated in the manner and for the purpose substantially as set forth.

77,032.—COAL STOVE.—C. B. Gregory, Beverly, N. J.

I claim, 1st, The combination of the outer casting, A, inner casting, C, drum, D, and the within described openings for admitting cold air to and discharging it from the space between the castings, C, and to and from the space within the drum, all as set forth.

2d, The vertical pipe, B, having a damper, g, situated between the opening, e, for admitting cold air to the space between the castings C and D) and the branch, f, through which the products of combustion pass to the said vertical pipe, as specified.

77,033.—BUCKLE.—Henry C. Griggs (assignor to Holmes, Griggs, and Smith), Waterbury, Conn.

I claim a buckle frame, constructed with the bar, B, when the said bar, B, is perforated, as at a a and E, so as to form hinging points, f f and d, and the connections, n n, so as to receive and support the tongue, F, and loop, I, in the manner substantially as herein set forth.

77,034.—CORD HOLDER.—John P. Gruger and Charles Makinson, Lancaster, Pa.

We claim the hook, A, with its jaw, a, in combination with the lever, B, with its rounded and eared head, b, both parts, A and B, connected by a pivot joint with each other, in the manner shown and for the purpose set forth.

77,035.—SCRUBBER.—V. A. Hacker, Knoxville, Tenn.

I claim, 1st, The combination of the brush, B, block, C, and sponge, D, with each other, and with the arms a2 of the handle, A, substantially as herein described, and for the purpose set forth.

2d, The perforated concave plate, E, and pivoted lever, F, in combination with the slotted handle, A, substantially as herein shown and described, and for the purpose set forth.

77,036.—MACHINE FOR BENDING WOOD.—Joseph Hale, Somerville, Mass.

I claim, 1st, In combination with the tube, d, and with the mandrel, e, when the arrangement is such that the action of the incline of said tube and the rotation of the mandrel cause a relative movement between the said parts, the entering trough, made adjustable to the diameter of the tube, and to the width of the strip being wound.

2d, The adjustable friction device, combined with the cross head carrying the inclined laced tube.

77,037.—CLOTHES PIN.—Harvey D. Haraden, Hartford, Vt.

I claim my improved clothes pin, consisting not only of the piece of wood, A, having the slit, A, the angular opening, c, and the hole, b, formed and arranged in it as described, but of the spring, d, arranged in said slit, the whole being substantially as described.

77,038.—GRATE BAR.—Andrew Hartupee, Pittsburg, Pa.

I claim, 1st, The notched cross bearers, b, of a furnace, in combination with the rib, d', of a T-shaped grate bar, of either cast or wrought iron, constructed and used substantially as and for the purpose set forth.

2d, A T-shaped grate bar, having a series of circular apertures near to each end, substantially as hereinbefore described.

3d, A T-iron grate bar, constructed with or without apertures through it, substantially as above described, as a new article of manufacture.

77,039.—RAILROAD RAIL.—J. Henry Herman, Boston, Mass.

I claim a railroad rail, having an inclined projection on one or both sides, provided with a groove, for the purpose of guiding the car wheel up into its proper position upon the track, substantially as set forth.

77,040.—GATE AND DOOR LATCH.—Charles C. Holcomb, Madison, Wis.

I claim constructing the pivoted ends of each latch with a shell or cup, which, when put together, inclose a coil spring operating upon the latches all together, being suspended by a screw or other device, passing through the centre of the cup and spring and into the gate or door, operating and constructed substantially as described.

77,041.—WASHING MACHINE.—George G. Hood, and John D. Kelley, Providence, R. I.

We claim the curved frame, C, carrying the corrugated rollers, G, when provided with the guide pins, fitting into the spiral springs, D, in the four corners of the box, in combination with the tub, A, tapering block, I, plate, H, drum, E, and shaft, F, as herein shown and described.

77,042.—METHOD OF MOLDING DESIGNS.—Leon V. Hue and Charles Roziere, Paris, France.

We claim the method of forming or impressing internal ornamentations or designs in glassware or crystal, in the manner hereinshown and specified.

77,043.—HEAD REST.—H. C. Hunt, Amboy, Ill. Antedated April 10, 1868.

I claim the passenger or invalid head rest, herein shown and described, composed of the pad, A, perforated standard, B, inclined fork, C, and hooks d and e, when constructed and arranged in the manner shown and described.

77,044.—LAND ROLLER.—Edwin F. Hutchinson, Auburn, Me.

I claim the metallic heads, B B, consisting of solid metallic plates, with exterior flanges and journals, as specified, and used in combination with staves, C, connected by the bolts, z, in the manner as set forth.

77,045.—SLEIGH BRAKE.—Allen Ingalls, Hartwick Township, N. Y,

I claim the brake irons, B, combined with levers, D and E, rods, F and G, and sleigh, A, arranged as described and set forth, for the purpose specified.

77,046.—CAR COUPLING.—Eli H. Janney, Alexandria, Va.

I claim, 1st, The combination of the oscillating catch, E, mounted upon a pivot, E', in the mouth of a draw head, B, the movable bar, F, lever, I, and latch, D, when constructed and arranged substantially as and for the purpose set forth.

2d, The support or rest, H, when used as and for the purpose set forth.

77,047.—CHIMNEY COWL.—David F. Jauss, Harrisburg, Pa.

I claim, 1st, The combination and arrangement of the case, S, with the two inner cases herein shown, so as to effect the communication of exterior air with the products of combustion, in the manner as herein set forth.

2d, The case, S, and the tubes, n and R, constructed and arranged substantially as herein shown and described.

3d, The construction of the deflectors, B m and L, in relation to each other and the hats, H and W, as herein shown.

77,048.—LAND ROLLER.—Elijah O. Jones, Brandon, Mich.

I claim, 1s , Constructing a sectional roller in such manner that the weight of the rear section or sections may be transferred, when desired, to the front and outward sections, substantially as and for the purpose described.

2d, The frame, A, rollers, B B C, frame, C', lever, D, standard, a2, and seat, E, the whole being combined and operated substantially as described.

77,049.—MODE OF ATTACHING WHIP SOCKETS.—J. W. Kelley, Cleveland, Ohio.

I claim the hooks, C, loops, D, key, D, as arranged, in combination with the socket, A, for the purpose and in the manner substantially as set forth.

77,050.—CORN PLANTER.—D. A. Kershner, Elliottstown, Ill.

I claim, 1st, The combination of the bed plate, F, sliding dropping plate, H, hoppers, G, leather conducting spouts, J, projection, h', pivoted lever, I, and arms, e1 e2, with each other and with the axle, E, and frame, A, substantially as herein shown and described, and for the purpose set forth.

2d, The combination of the lever, M, cross bars, L and P, and leather straps, K and Q, with each other and with the bed plate, F, and plough beams, R, substantially as herein shown and described, and for the purpose set forth.

3d, The combination of the frame, W, concave rollers, X, scraping device, Y Z A', and lever, B', with each other and with the frame, A, substantially as herein shown and described, and for the purpose set forth.

77,051.—MUFF.—M. A. King, New York, N. Y.

I claim the spring strip, a, in combination with the other parts of the frame and muff, substantially as and for the purpose set forth.

77,052.—COMBINED SEEDER, CULTIVATOR, AND HARROW.—Daniel Kint, Hasleton, Iowa.

I claim, 1st, The agitator, E', lever, F', link, H', and friction rollers, I', constructed and arranged to operate in the manner and for the purpose specified.

2d, The cultivator, D, and harrow, K, as constructed and arranged in relation to each other, and operated by the wheel, C, arms, H a, and lever, J, in the manner and for the purpose substantially as set forth.

3d, The combination of the seeder, A', cultivator, D, and vibratory harrow K, when constructed and arranged to operate conjointly in the manner and for the purpose set forth.

77,053.—MITER GAGE.—George W. La Baw and Ira W. Fleming, Jersey City, N. J., and Aaron T. Hutchinson Harlem, N. Y.

We claim the arms, d, jointed to the stock, a, and connected by the links, g, to the clamp, e, that slides upon the stock, a, in combination with the saw guides, k, at the joint, i, and the saw guide, h, on the clamp, e, substantially as and for the purposes set forth.

77,054.—CENTRIFUGAL HYDRO-EJECTOR.—Hugh W. Lafferty and Robert Lafferty, Gloucester, N. J.

We claim, 1st, The combination of oil cup, C, sleeve, S L, hollow shaft, H S, and india rubber piece, I D, with the shaft, S, of a centrifugal ejector, the whole constructed and operated in the manner and for the purpose above set forth and described.

2d, The combination of inverted conical lug with hollow cone, C' o', and nut, H N, with shaft, S in the manner and for the purpose herein set forth and described.

3d, The combination of bearing boxes, B and B', and their braces, B d, ribs, R B, and bolts, b b and b' b', with india rubber, I D, hollow shaft, H S, oil cup, C', sleeve, S L, and shaft, S, the whole constructed and operated in the manner and for the purpose above set forth and described.

4th, The combination of waste oil cup, C', with the shaft of a centrifugal ejector, in the manner and for the purpose above set forth and described.

77,055.—BOOT HEEL.—George Lane, Hamilion, Ohio.

I claim the metallic plate, A, having flanges, B D, in combination with the heel, E, and the central screw for attaching said heel to the plate, as herein shown and described.

77,056.—COAL STOVE.—Dennis G. Littlefield, Albany, N. Y.

I claim, 1st, The complete separation of the covered magazine from the sides of the surrounding case, and the devices described whereby it is suspended and securely held in its proper position for use, while it may at pleasure be taken out of the case and again restored to its place, without injury or disturbance to the case.

2d, The adjustment, in the manner described, of the handle of the cover of the magazine.

3d, The reciprocal adaptation of the magazine cover, the flute plate, and the hopper to each other, and of the hopper to the cover of the burner, in the manner and for the purposes specified.

77,057.—CORN PLANTER.—H. C. Locke, Somersville, Tenn.

I claim, 1st, The reversible plows C C, mounted on the standards, a, constructed and arranged substantially as described, in combination with the drill tooth, E, and the seed hopper, F, as and for the purpose set forth.

2d, The seed hopper F, provided with the gate, b operated by the spring, c and cam, e, or the wheel, G, as and for the purpose described.

3d, The combination of the reversible plows, C C, drill tooth, E, and seed hopper, F, with its automatic discharging mechanism, and the dragging coverer, H, arranged and operating as described.

4th, The standard, a, constructed with two upright bars and a horizontal connection bar at the bottom, substantially as shown and for the purpose described.

77,058.—HARVESTER.—George G. Lyman, Independence, Iowa, assignor to himself and George P. Ladd, Milwaukee, Wis.

I claim, 1st, The combination of the driving wheel, A, friction rollers, a, in the rim, b, of said wheel, vibrating levers, c, sickle bar, e, and link, g, as herein described for the purpose specified.

2d, The vibrating levers, c c, in combination with the sickle bars, e e, and the link, g, as herein described for the purpose specified.

77,059.—LAMP SHADE SUPPORTER.—James W. Lyon, Brooklyn, N. Y.

I claim, 1st, Grooving the clamping ring center of the shade-holder on the inside, correspondingly with the bead on the lower corner of the chimney gallery of a kerosene lamp burner, substantially as described, whereby the clamping ring centre is held securely in place, and enabled to gripe the strongest part of the gallery, substantially as set forth.

2d, Adapting the clamping ring center of the shade holder to burners which have chimney screws, by removing a portion of the metal of the clamping ring center, which would otherwise interfere with the screw, substantially as described.

3d, Adapting the clamping ring center shade holders to burners which have chimney springs, by the relative arrangement of the radial arms with the clamping ring center, and its ears, and a clamping screw of sufficient length, so that the spring can play freely between the ears when thrown down to release the chimney, substantially as set forth.

4th, In combination with radial supporting arms, a clamping ring center, constructed substantially as herein described, so that it may be applied either to a burner having a chimney thumb screw, or to burners having chimney springs, at pleasure, and without change.

5th, In combination with a clamping ring center, extensible supporting arms, whether sliding or hinged, substantially as described.

77,060.—FRUIT CRATE.—Truman Mabbett, Sr., Vineland, N. J.

I claim, 1st, A double crate, composed of the slats, a a a a and b b b, corner uprights, d e, perforated bottom, A, all as substantially shown and described and for the purpose set forth.

2d, The spring bottom, substantially as shown and described, in combination with the double crate, all as and for the purpose set forth.

77,061.—SKATE FASTENING.—Charles B. Maedel and Jacob Wolf, Chicago, Ill.

We claim the bar, A, L-shaped, provided with a loop at one end, and having a shoulder at its other, when connected to the skate by the heel calk, E, and to the boot or shoe heel by the eyelet screw, B, in the manner substantially as shown and described and for the purposes set forth.

77,062.—PENCIL CASE.—William Maginn, New York, N. Y.

I claim an article of manufacture, consisting of a pencil case, having whalebone cylinders, a, substantially as shown and described and for the purposes set forth.

77,063.—BOOTS AND SHOES.—Horace B. Marshall, Waldoboro, Me., assignor to himself and William W. Lummus, Lynn, Mass.

I claim making or forming loops, a a, of flexible material, alternately on each side of the openings for the string or lacing.

Also, in combination with the loops above claimed, a flexible string or lacing to draw the loops together.

Also, in combination with the loops and lacing, one or more eyelet holes, d d, to facilitate the fastening of the lacing.

Also, making or forming the loops for the string or lacing alternately on the edges of the openings of the various kinds of boots and shoes by perforating or cutting out the binding or edge facing of said openings.

77,064.—BUCKLE.—John A. Mahmeyer, Beardstown, Ill.

I claim a buckle, composed of the two parts, A B, fitting together or arranged substantially as shown and described, and with the pin or tongue, f, applied to the part, B, as set forth.

77,065.—VACUUM PAN APPARATUS.—Franz O. Matthiessen, Jersey City, N. J.

I claim the combination, with the vacuum pan, of an auxiliary air tight tank or vessel, provided with suitable air and discharge cocks or valves, and having connections under the control of appropriate cocks or valves, with an air pump, or its equivalent, and with the vacuum pan, both above and below, for operation in the manner described, and whereby a boiling, or any portion of a boiling, may be run off without destroying the vacuum in the pan, and a continuous boiling therein be kept up, substantially as specified.

77,066.—FENCE POST.—P. McDuff, Atchison, Kansas.

I claim the triangular fence post, constructed as described, consisting of the upright, A, having cleats, B, the inclined brace, D, short cross piece, E, and wire, m, as shown and described, for the purpose specified.

77,067.—PLANING MACHINE.—Horace G. McDuffe, Bradford, Vt. Antedated April 16, 1868.

I claim in a planing machine, as above described, a carrier, having its upper or outer surface formed into a series of beds or depressions, O P R, in shape the same as the shingle or clapboard to be planed, when constructed and operating in combination with the planer, X, substantially as and for the purpose set forth.

77,068.—SAFETY ATTACHMENT FOR POCKET BOOK.—Aaron McNeill, Cincinnati, Ohio.

I claim the flat spring catch, C, in combination with the socket, A B b, and ligament, D E, all constructed as herein represented and described, to prevent the abstraction of the pocket book without the knowledge of the owner, but permit him to readily detach it within the pocket when desired.

77,069.—BLACKING FOR LEATHER, ETC.—Ithamar B. Merrill, Dexter, Me.

I claim a blacking and polishing compound composed of the above named ingredients, in the manner and about the proportions substantially as described.

77,070.—APPARATUS FOR DISTILLING PETROLEUM.—James Miller, Allegheny City, Pa.

I claim, 1st, The combination of two or more vaccum stills, one, A, for heating the oil and driving off its more volatile ingredients, and the other, B, for carrying on a continuous distillation, by feeding therein the heated oil from still, A, through a coiled or zigzag pipe, m', with apertures, n, substantially as and for the purpose hereinbefore set forth.

2d, The use in the discharging end of the condensing pipe of oil distilling apparatus of a glass section, g g', and cock, f or f', in connection with the vacuum still, for ascertaining the rapidity of the condensation, and the quality of the product, substantially as above set forth.

3d, A coiled or zigzag pipe, m', with perforations, n, arranged in a vacuum still, B, with a continuous feed, either separately or in combination with the gage cocks, n'', constructed and used substantially as and for the purposes hereinbefore set forth.

4th, Utilizing the uncondensed gases and vapors which are passed over in the process of distillation, by feeding them from the receiving tanks through perforated pipes, l', into the furnace, substantially as hereinbefore set forth.

77,071.—CAR COUPLIAG.—Simeon Mills, Madison, Wis.

I claim the draw bar, B, secured in the draw head, A, in the manner specified, and provided with the hooks, C and D, and lug, E, as and for the purpose specified.

77,072.—ILLUSION TOY.—John A. Minor, Middletown, Conn.

I claim the toy constructed substantially as set forth, so as to produce the illusion as described.

77,073.—PREPARING JUTE YARN.—James Monach (assignor to himself, John Hutchinson and Jeffrey Hart), Philadelphia, Pa.

I claim as a new manufacture jute yarn treated with caustic alkali of from forty to fifty degrees Twadell's hydrometer, substantially as described for the purpose specified.

77,074.—METHOD OF MOVING BUILDINGS.—John H. Moore Binghamton, N. Y.

I claim the frames, A A, having three trucks each, and constructed as described, with transverse pieces, C, I and J, and springs, E, all in combination with the cross piece, G, resting on springs and rollers, substantially as described and for the purpose set forth.

77,075.—FEATHER RENOVATER.—James C. Morehead and Wm. W. Elliott, New Madrid, Mo.

We claim, 1st, In a machine for renovating feathers, the combination of the

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water boiler, B, with the chemical boiler, D, and the pipes, G G', for the purpose of generating, conveying and uniting the two kinds of steam, preparatory to subjecting the feathers to their joint action.

2d The cylinder, I, when constructed of slats, i i i, slightly separated, in the manner and for the purpose set forth.

3d, The combination within a revolving cylinder of the tubular shaft, J, with the pipes, K K,' the latter being provided with valves, o o o, substantially as and for the purpose set forth.

4th, The combination of the boilers, D D, pipes, G G', cylinder, I, shaft, J, pipes, K K', valves, o o o, and stop cocks, r r, substantially as and for the purpose set forth.

5th, The method of purifying and renovating feathers, substantially as herein described.

77,076.—WRENCH.—Ira Morse, Danbury, Conn.

I claim a wrench having the bar, A, serrated rigid jaw, B, and hinge serrated jaw, D, attached to the sleeve, C, both jaws being divergent outward, and all constructed and arranged substantially as described.

77,077.—MACHINE FOR OPERATING CHURNS, ETC.—Ira Morse, West Frankiin, Pa.

I claim the within described machine for operating churns, composed of the rockers, a, cross bars, B, platform, C, frame, D and E, forked post, F, lever, G, box, H, bar, I, lever, K, and block, L, for the purpose and substantially as herein described.

77,078.—WATCH.—Charles S. Moseley, Elgin, Ill.

I claim the combination of a stud and set screw or screws, for holding and fastening the outer end of a hair or balance spring to a watch movement, with a bridge plate or any equivalent therefor, substantially as described.

77,079.—SAWMILL.—J. W. Moyer, Cherry Valley, N. Y.

I claim, 1st, The combination with a gig saw, S, of two springs, s s', of equal power, the former at the upper end of the saw and acting upwards upon it, and the latter at its lower end, and acting downwards upon it, all the parts being constructed and combined and operating together substantially in the manner and for the purposes set forth.

2d, The combination of the gig saw, S, with the notched levers, C E, and equal springs, s s', all the parts being constructed and combined substantially as and for the purposes specified.

77,080.—STRIKING ATTACHMENT TO CLOCKS.—N. E. Mulford, Madison, N. J.

I claim, 1st, The arrangement of the seven detent pins, u u1 u2, etc., on the face of the hammer wheel, E, the said pins being set in a spiral line, as described, and at such distances apart that the required number of pins, i i, will be between every two adjacent pins, u, substantially as and for the purpose herein shown and described.

2d, The heart-shaped cam, O, when mounted on or connected by gear or otherwise with the tube, H, to which the hour hand is fastened, and when combined with a lever N, which is gradually raised or lowered by the rotation of the cam, so that its end will be brought into a different plane, substantially as and for the purpose herein shown and described.

2d, The lever, N, when arranged substantially as herein shown and described, in combination with the heart shaped cam, O, turning with the tube, H, and with the seven pins, u, u1, etc., arranged spirally on the face of the wheel, E, which carries the thirteen pins, i i, substantially as herein shown and described.

4th, The lever, m, when connected with the bar, o, and when raised and lowered by means of the cam, L, in combination with the stops, p, on the fly, F, all made and operating substantially as shown and described.

5th, Connecting the detent lever, N, with the retaining lever, M, and with the releasing lever, o, substantially as and for the purpose set forth.

6th, The arrangement and combination with each other of the heart shaped cam, O, lever, N, wheel, E, having the seven pins, u, u1, etc., cam, L, levers, o and M, and stops, p, on fly, F, all made and operating substantially as herein shown and described.

7th, The half-hour striking apparatus, when consisting of the hammer, P, rods, w and v, the latter being held by means of a spring catch, z, substantially as herein shown and described.

8th, Connecting the lever, M, with the catch, z, of the half-hour striking apparatus, so as to release the same, substantially as herein shown and described.

9th, The arrangement herein shown and described of setting the half-hour striking apparatus by means of the arm, l, of the main hammer, which catches the rod, y, of the half-hour hammer, locking it with the catch, z, when the main striking device is in operation.

10th The cam, L, when mounted on the staff, G, as herein shown and described, and when provided with a recess, s, and with an elevation, b', opposite to the same, substantially as and for the purpose herein specified.

11th, Pivoting the arm, o, to the lever, M, and combining it with the spring, r, for the purpose of allowing the hands to be turned backward, substantially as herein shown and described.

12th, Setting the half-hour striking apparatus by means of the main striking apparatus, when the same is in motion, substantially as set forth.

77,081.—FURNACE DRAFT REGULATOR.—James F. Neall and Wm. Myers, Philadelphia, Pa.

We claim the arrangement of the piston, A, cylinder, B, packing ring, C, and weighted lever, E, substantially as described.

77,082.—SAW SET.—Jacob Noepel and Bernhard Assman, Newark, N. J.

We claim the short lower handle, B, pivoted in the slotted long handle, A, and provided with a cam, f, which works upward through the slotted handle against the lever, C, whereby the short handle is operated by the fingers of the hand, while the long handle is held comparatively stationary, as set forth.

77,083.—HOE.—G. H. Owens, Maysville, Ky.

I claim the ferule, D, the shank, B, with the teat, e, and the handle, C, constructed, arranged and combined substantially as and for the purposes described.

77,084.—LOCK-UP SAFETY VALVE.—Ralph G. Packard and Michael Hastings, Brooklyn, N. Y.

We claim, 1st, In lock-up safety valves, forming the weights in sections, adapted to be inserted and removed through openings, a, in the exterior or lock-up casing, substantially as and for the purpose herein specified.

2d, In connection with the above, dove-tailing together the several pieces, substantially as and for the surpose herein set forth.

77,085.—FUR MUFFLER.—G. W. Parker and W. F. Parker, Kalamazoo, Mich.

I claim as a new article of manufacture, the fur muffler, A, and lining, B, when the same are constructed in the form shown, and provided with bead bands, D D', and the whole is so constructed and arranged as to operate substantially as described for the purpose specified.

77,086.—KNIFE FOR REMOVING THE SKINS OF ANIMALS.—S. J. Patterson, Bridgeport, Conn.

I claim as a new article of manufacture, a knife for removing skins from animals, constructed as described, consisting of the curved blade, A, having a back of irregular form, adjustably secured between the two sides, B C, having their edges beveled at different angles and forming the outer portion of the handle, E, said plate and sides being pointed at one end, in the form of a knife, as herein shown and described.

77,087.—PORTABLE FENCE.—Lewis P. Pease, McCordsville, Ind.

I claim the alternate long and short panels, so arranged that the adjustable brace, g, will bind two long and one short panel together, in combination with the long bars, e e, as and for the purpose set forth and described.

77,088.—GATE.—John J. Pellett, Oconomowoc, Wis.

I claim the combination of the pivoted bars, a a, with the enclosing frame, S S' T T1 T2, when operating substantially as and for the purpose set forth.

2d, The combination of the arms, H, connecting rod, h, and locking pin, k', when used in connection with a sliding gate, as above described, and with the wheel and cord for opening and shutting it, as a device for securely locking said gate, in the manner described.

77,089.—SKATE.—Richard Pohl (assignor to Oswald Unger), Port Huron, Mich.

I claim, 1st, The construction of a skate in substantially the form as described, that the spring of the skate will cause it to be firmly attached to the boot of the wearer.

2d, The slides, H and M, provided with set screws, J and N, the levers, G and F, and plate, L, when arranged and operating substantially as and for the purpose set forth.

3d, The combination of the above named parts with the runner, A, the heel plate, C, provided with the flange, P, and points, R, and the bar, E, when constructed and operating substantially as and for the purposes described.

77,090.—HOT WATER ELEVATOR.—Wm. E. Prall, Washington, D. C.

I claim in connection with a stove or like heater, and for domestic purposes, an automatic water elevator, constructed and operating substantially and for the purpose set forth.

77,091.—HARROW.—John Rankin, Taunton, Mass.

I claim the harrow constructed as described, and consisting of the bars, a1 a2 a3 a4, toothed rock shafts, D E F, having standards, G H I, crank shaft, P, bearing loose wheel, R, and fixed wheel Q, clutch S, lever T, three armed pivoted lever K, and pitmen, J M N O, all arranged and operating in the manner and for the purpose herein set forth.

77,092.—MILK CAN.—Charles A. Reight (assignor to himself, Henry B. Dill and George A. Swalm), Middletown, N. Y.

I claim the combination of the tin band, B, double seamed, with the tin top or bottom of a milk can, and soldered or riveted to the iron cylinder, A, of greater thickness than the said bands, or top or bottom, all substantially as and for the purpose shown and described.

77,093.—APPARATUS FOR CLIPPING THE HAIR OF ANIMALS.—Arthur Dallison Renshaw, London, England.

I claim, 1st, The cutters, a and b, constructed, combined and operating substantially as and for the purpose set forth.

2d, The combination of the said cutters with the adjustable presser bar, g and lever, k, and with or without the spring, m, for the purposes and substantially as set forth.

3d, Operating the lever, k, by means of a cord or wire passed through the handle, p, or over a rotating cam or disk, and connected with any suitable driving mechanism, substantially as set forth.

77,094 —STILL FOR DISTILLING HYDROCARBON.—Charles W. Requa, Albany, N. Y.

I claim, 1st, The use of steam in the distillation of liquid hydrocarbons in stills heated by external fire, when the steam is introduced into the still in such a manner that the lowest stratum of liquid therein will be continually removed from contact with the bottom of the still by the action of the steam and its place supplied with fresh liquid from above, substantially as and for the purpose above described.

2d, Constructing stills heated by an external fire, and in which steam is used, as and for the purpose above described, with an air chamber over them, constructed and operating substantially as and for the purpose above described.

77,095.—RUDDER GEAR.—C. T. Rideout, Boothbay Harbor, Me.

I claim the combination and arrangement of the toothed sector, C, having the tiller and socket, T T', the toothed disk, C', having projection, D, with hole, h, and the perforated arc, D', as herein described for the purpose specified.

77,096.—TOBACCO PIPE.—Henry R. Robbins (assignor to himself and W. H. Green), Baltimore Md.

I claim in a smoking pipe, composed of the stem, A, bowl, B, tube, D, and vessel, C, the minutely-foraminated screen, c, operating in connection with the tube, D, and vessel, C, substantially as and for the purpose specified.

77,097.—AMALGAMATOR.—William Robbins, Hinsdale, Ill., and Edward Swasey, Bucksport, Me.

We claim, 1st, The agitator, f, arranged to operate in conection with the tube, B, substantially as described.

2d, An amalgamator, consisting of a tub for holding the mercury, and a rotating tube provided with arms for stirring and mixing the gold, or other material, with the mercury, and having its lower open end arranged to feed the material in the mercury near the bottom of the tub, with the agitator, f, for preventing the tube from becoming clogged or choked, all constructed and arranged to operate substantially as shown and described.

77,098.—REFRIGERATOR.—Henry A. Roberts, Boston, Mass.

I claim, 1st, A refrigerator, constructed of metal, or other suitable material, of two or more sections, substantially as and for the purpose described.

2d, Diminishing the interior capacity of a refrigerator chamber, by dividing, cutting off, or removing a portion thereof, for the purpose of economizing in the use of the cooling agent, substantially as described.

3d, The movable and adjustable frame, d', conforming to the interior shape of the refrigerator, with the receptacles, e, so formed that they fully utilize the interior capacity thereof, substantially as and for the purpose described.

4th, An ice box, having a close bottom, perforated sides, covered with absorbing fibrous material, whereby the box is rendered air-tight, substantially as described.

5th, An ice box, as above described, provided with a flue or series of flues, with or without radial divisions for the circulation and condensation of air, substantially as described.

6th, An ice box, as above described, provided with a flue or series of flues, with or without perforated sides or evaporating surface, substantially as described.

77,099.—COMPOUND FOR TREATING HIDES AND SKINS.—L. F. Robertson, West Farms, N. Y.

I claim a compound for treating hides and skins made of the materials herein specified.

77,100.—LAMP CHIMNEY.—James Robinson Funkville, Pa., assignor to himself and William Robinson, Brooklyn, N. Y.

I claim the lip, b, formed of the partially-severed material of the flange, c, in the formation of the notch or recess, a', substantially as and for the purposes set forth.

77,101.—FENCE FOR POULTRY YARD.—Henry W. Rutt, Reedsburg, assignor to himself and Jonathan M. Rhoads, Wayne county, Ohio.

I claim the reel, C C, composed of two semicircular disks, connected together by a narrow slat at each side, and one at the bottom, and pivoted between the vertical fence posts, B B, directly above the fence, all constructed, arranged and operating as specified.

77,102.—MACHINE FOR CUTTING TOBACCO.—Christopher E. Rymes, Somerville, Mass., assignor to Robinson & Hearn, New York city.

I claim, 1st, A tobacco-cutting machine, in which the bar of tobacco to be divided is passed between the rectilinear surfaces of two traveling and converging endless chains or belts, one of which serves to support the bar, while to the other are attached the severing knives, substantially as described.

2d, Attaching the knives of a tobacco-cutting machine to one of two traveling and converging planes, so that the plane of the knife, while passing through the tobacco, shall, in every position, be parallel to its plane in every other position while so passing, and thus a square and smooth cut be secured, as specified.

3d, The links, l', constructed, arranged and operating as described and shown.

4th, The combination of a knife with one or more of the links of an endless chain, as specified.

77,103.—BRIDGE.—John Sanderson, Fredericksburg, Ohio.

I claim the bridge herein described, composed of sections, consisting of the cross ties or ribs, B B, and wings, A A, provided with lugs and recesses, as described, the several sections being bolted together, as and for the purpose set forth.

77,104.—NAILING OR PEGGING MACHINE.—Joseph F. Sargent, Boston, Mass.

I claim, 1st, A pegging or nailing machine, constructed substantially as described, so as to operate to automatically cut, at one location, short pieces from a long or wire like formation of material and to convey them, when so cut, to another location, where they receive the action of the driver.

2d, The tube, or a part thereof, through which the nails or pegs are to be forced into or toward the material to be united, made in two parts, capable of being closed and separated on a longitudinal plane passing through the tube, substantially as and for the purpose specified.

3d, The tube through which the nails or pegs are forced by the driver, made in two or more parts, of which one division is made substantially at right angles to the axis of the tube, so as to enable one part of the divided tube to be moved with respect to the other part or parts, substantially as and for the purpose described.

4th, The combination of the tube or groove, through which the wire is thrust to be subjected to the action of a cutter, with a cutter, for severing a nail or peg from the wire or wire-like material.

5th, The combination of intermittently-operating feed-rolls or wheels, for feeding material of a wire-like form, with cutters, for cutting off the material so fed, to form nails or pegs, substantially as described.

6th, In combination with feed-wheels, for supplying lengths of wire-like material to the cutters, the ratchet-wheel and pawl, and the adjustable shell or shield, v.

7th, A pegging or nailing machine, constructed substantially as described, so as to operate, in producing correct register of the awl-hole beneath the driver, by first transferring the contact of the sole from the nail-tube to the feed-foot, then causing the awl to enter and withdraw from the sole, then giving the feeding movement, to bring the awl and driving-holes in register, and keeping the contact of the feed-foot with the stock till the driver has made its driving-stroke, after which, by vertical movement of the feed-foot, contact of the sole is transferred to the driving-tube.

77,105.—MACHINE FOR MANUFACTURE OF SLATE PENCILS.—D. R. Satterlee, New Haven, Conn.

I claim, 1st, The combination of the two series of cutters, each series formed so that the first half forms the pencil, and while the second completes the pencil, and combined with the grooved plate, F, and correspondingly grooved bed, I, in relative position to each other, and to the two series of cutters described, so as to form guides from the first series of cutters to the second, and from the second to the discharge, substantially in the manner herein set forth.

2d, In combination with the above, the feed-rolls, D and k, arranged and operating in the manner substantially as described.

3d, The arrangement of the cutters between the heads, L, so as to be set and adjusted, substantially in the manner described.

77,106.—ENAMELED WATER-COOLER.—Charles C. Savery, Philadelphia, Pa.

I claim, 1st, The mode of enameling the inside and outside of the water and ice-tank (or both, if used separately) of a water-cooler and refrigerator, in the manner and for the purpose above set forth and described.

2d, The combination of a water and ice-tank or water and ice-tanks, enameled inside and outside, with a water-cooler and refrigeraror, for the purpose and in the manner above set forth and described.

3d, The combition of vitiated air discharge-tube or pipe, M T, with the provision chamber of a water-cooler and refrigerator, in the manner and for the purpose above set forth and described.

77,107.—WRENCH.—Thos. A. Searle, Providence, R. I.

I claim the sliding collar, D, and spring, S, in combination with the handle, H', shank, H', toothed segment, B, stationary jaw, A, slotted movable jaw, a, and pivots, a1 a2, all constructed, arranged, and operating as and for the purpose described.

77,108.—BALING-PRESS.—Geo. W. Serrin, Memphis, Tenn.

I claim, 1st, The toggle-levers, when suspended upon the cords or chains, F H, forming flexible suspension points, whereby bales of unequal size are pressed with equal force by the platens, C, substantially as herein set forth.

2d, The arrangement of the cords, F H, pulleys, c c', and windlass, G, as herein described, for the purpose specified.

77,109 —FENCE.—N. Lawrence Shaw, Wilson, N. Y.

I claim the combination of the fence-panels, A A, with the wire or wires, e, applied substantially in the manner and for the purpose specified.

77,110.—OYSTER-WINDER.—Samuel S. Shaw, Newport, N. J.

I claim, 1st, An oyster-winding apparatus, consisting of the shaft B, sliding drum, C, gear-wheels, b c and d, and pivoted segment, F, all made and operating substantially as and for the purpose herein shown and described.

2d, The drum, C, when arranged so that it can turn and slide on the shaft, B, and when combined with the gears, b c, and with the lever, D, all made and operating substantially as set forth.

3d, The block, F, when pivoted to the frame, A, and when provided with the friction-roller, c, as set forth.

4th, The slotted bar, e, for elevating the block, F, in combination with the same, and with the drum, C, all made and operating as set forth,

77,111.—MODE OF SURFACING SHEET-IRON AND METAL PLATES.—Thomas Shaw, Philadelphia, Pa.

I claim the application of carbonaceous material to the heated surfaces of iron and steel, whilst being rolled or otherwise manipulated upon, substantially as and for the purpose set forth.

77,112.—FURNACE DOOR FASTENING.—P. E. Shear, Saugerties, N. Y.

I claim the hinged or jointed bar, E, in combination with the hinged link, c, and the eccentric, F, all constructed, arranged, and applied to the frame or mouth-piece of a furnace, substantially as and for the purpose set forth.

77,113.—BED-BOTTOM.—Philander P. Simmons, Davenport, Iowa.

I claim a spring bed-bottom, consisting of a web made of slats, d, woven together with wire, in combination with the wooden strips, e, and the spiral springs, f, or their equivalents, when constructed and arranged substantially as described.

77,114.—OPERATING WINDOW-SHUTTERS.—Thomas J. Sloan, New York city.

I claim the employment, in combination with the gears, K f, and shaft, H, of the retaining-catch bar, n, and a cam, O, for lifting the same, the whole arranged to operate substantially as described, for the purpose set forth.

Also, the employment, in combination with the hinge-sector, f, and stand, D, of a swinging or movable retaining pendant, F, arranged to operate as described for the purpose set forth.

77,115.—LAMP SHADE.—Austin A. Smith, Seneca Falls, N. Y. Antedated April 11, 1868.

I claim, 1st, As a new article of manufacture, a lamp or gas-light shade of usual form, composed of numerous upright panels or sections, C C C, situated closely together to form a screen, and turning horizontally or angularly on suitable joints, the whole arranged and operating so that any number of said panels may be opened at any desired position, and the passage of light may be graduated, as herein set forth.

2d, Forming one or both of the joints of the panels, of spring-wires, f f, resting in the square or oblong slots, d, operating as and for the purpose specified.

77,116.—TILTING CHAIR.—Calvin D. Smith, Baldwinville, Mass.

I claim the arrangement and combination of the spring, the bands, and the barrel or roller, as applied to the chair and its stand.

Also, their arrangement with and application to the stand and chair, substantially in manner as specified.

77,117.—TILTING CHAIR.—Calvin D. Smith, Baldwinville, Mass.

I claim the combination as well as the arrangement of the stud, a, the stop bar, d', the two arms, b b, and the spring, e, as applied to the chair and its supporting frame, D, and connected together, substantially as specified.

Also, the arrangement of the stud, a, the stop bar, d', the two arms, b b and the spring, e, with the chair and its supporting frame, D.

77,118.—BRICK MACHINE.—John H. Smith and Charles H. Florence, Richview, Ill, assignors to themselves, F. F. Seawell, and H. G. W. Whittenburg.

I claim, 1st, The combination of the pivoted frame, I, bearing the rollers, J, mold holder, K, hopper plate, d, inclined pawls, M, upon shaft, N, the segment, P, and straps, U, all arranged and operating as described for the purpose specified.

2d, The mold, L, the sides, l1, and ends, l2, of which are connected to the bottom, l3, and to each other by inclined prongs, T, arranged substantially in the manner herein shown and described, and for the purpose set forth.

77,119.—RAILROAD SILL AND CHAIR.—Jasper Snell, Pottsville, Pa.

I claim 1st, The base plate, A, walls, B, and springs, G, all substantially as and for the purpose set forth and described.

2d, The plate, C, dovetailing between the walls, B, and provided with the lugs, c, substantially as above set forth and described.

3d, The chairs, D, dovetailing between the walls, B, and provided with the jaws, d d, in manner substantially as above set forth and described.

4th, The railroad sill and chair consisting of a base plate, A, walls, B, and place, C, resting on springs, G, in combination with chairs, D, furnished with the jaws, d d, in manner and for the purposes substantially as above set forth and described.

77,120.—HORSE HAY FORK.—N. Starr, Jr., Homer, N. Y.

I claim the two spurs, a, pivoted at their lower ends to the stock, A, in combination with the shifting bar, c, and toggle braces, b, substantially as herein set forth for the purpose specified.

77,121.—COMBINED RULE AND POCKET KNIFE.—O. B. Steele, Franklin, Pa.

I claim combining a jointed rule with the handle of a pocket knife, substantially as and for the purpose shown and described.

77,122.—DOOR STOP.—A. G. Stevens, Manchester, N. H.

I claim, 1st, A door stop, constructed as described, consisting of the pivoted lever, G, formed at the lower end into a toe, F, spring, L, cushion, K, and case, E J.

2d, The combination of pivoted lever, G, spring, L, and cushion, K, with the case, E J, attached to the lower part of the door, A, substantially as described.

3d, Operating the door stop by means of the trip pin, N, substantially as described and for the purpose specified.

77,123.—COMPASS.—H. Stewart (assignor to G. F. Wright and Wm. Orr, Jr.,) Clinton, Mass.

I claim the combination, in one instrument, of dividers and inside and outside calipers, by use of the adjustable combination points, used in the manner and for the purpose herein described and set forth.

77,124.—APPARATUS FOR BURNING HYDROCARBON.—F. T. Suhr, Titusville, Pa. Antedated April 7, 1868.

I claim, 1st, The cap or cover, C, together with the inside partitions, m m, and the reducer, P, for the purpose of confining and directing the currents of air upon the flame before they can pass out of the opening at the top.

2d, The combination of the frame, draft pan, oil dish, and covers, as above described, all so placed, air-tight, in the fire box or chamber, that no air can pass into the said fire box, except such as passes through the draft pan aforesaid, for the purpose of producing heat from crude petroleum or other combustible fluids.

77,125.—HORSE HAY FORK.—J. B. Sweetland, Pontiac, Mich.

I claim, 1st, The arms, A and A', constructed substantially as represented, and provided with two sets of tines, G G and H H, as and for the purpose set forth.

2d, The cross head, J, provided with two or more tines, and adjustably or rigidly connected to the arms, A A', as and for the purpose set forth.

77,126.—INDEXING BOOKS AND LEDGERS.—J. H. Swindell, Camden, N. J.

I claim arranging an alphabeticall or numerical index for books, by cutting two or more sets of notches in the margins of such books, and by making appropriate marks to each of the notches, substantially as and for the purpose herein shown and described.

77,127.—TRUNK.—C. A. Taylor, Chicago, Ill.

I claim the method of securing trunks, as herein described, by means of the braces, D, and studs, I, or their equivalents, arranged to operate substantially as herein set forth.

77,128. — SHINGLE MACHING. — Albert Thompson, Ridgeway, Pa.

I claim, 1st, The combination of the carriages, I I I, having the barbed coupling bolt, m3, with the barbed dogs, m m, spring, m1, and cord and pulley, m2, by which either of the carriages can, independently of the other, be instantly attached to or detached from the shifting beam, L, which operates them.

2d, The combination of the cam wheels, S, having the cams, s s s s, formed and operating in the manner described, with the shaft, N, having the spur wheels, n' n', the spurs of which are at different distances apart, the whole operating together in the manner and for the purposes set forth.

77,129.—SAW MILL.—C. R. Tompkins and John Wright, Rochester, N. Y,

We claim the movable saddle, d, turning on the hub, l, and adjusted by the set screws, H H, and the slots, J J, with their confining screws, all adjusted to operate substantially as described.

77,130.—TRY SQUARE.—E. J. Toof, Fort Madison, Iowa. Antedated April 11, 1868.

I claim, in combination with a try square, A, an adjustable cutter, B, arranged and operating substantially in the manner and for the purposes set forth.

77,131.—PAPER CLAMP AND INKSTAND COMBINED.—E. J. Toof, Fort Madison, Iowa.

I claim the combination of the paper holder, A, with the inkstand, E, provided with a cover, F, with or without the sponge arm, G, shaft, I, whether extensible or not, and the crank, J, or its equivalent, arranged and operating substantially as and for the purposes herein described.

77,132.—CARRIAGE COUPLING.—Ira Van Pelt and J. S. Van Pelt, Petersburgh, Va.

We claim the combination of the sliding pivoted swingle tree, E, with the chains, I J J, axle, C, and bolster, G, substantially as and for the purposes specified.

77,133.—SCAFFOLD BRACKET.—Samuel D. Van Pelt, Anderson, Ind.

I claim the plate, A, with claws, B, and upright, H, the dog lever, I, with dogs, E E, pivoted to the upright, H, of the plate, A, and the upright, D, pivoted to the dog lever, I, all constructed and operating substantially as shown and described and for the purpose specied.

77,134.—HORSE HAY FORK.—Edward L. Walker, Benford's Store, Pa.

I claim, 1st, A prong at the lower end of a hay elevating fork, in combination with the sliding bar, e, or equivalent mechanism, that acts to turn said prong up below the hay, substantially as set forth.

2d, The link, k, and lever, h, in combination with the bars, e and a, and prong, l, substantially as specified.

77,135.—BUTTER WORKER.—Emory P. Walker, Belchertown, Mass.

I claim the diagonal flanges, D D, placed at the mouth or front end of the bottom, A, of the box, with a hole, x, as described, the various parts being constructed and operating as specified.

77,136.—HORSE HAY FORK. — Joseph H. Walker, Grand Rapids, Mich.

I claim the cam lever, D, pivoted between the upper ends of the bars, C C, and arranged to operate in combination with the curved bar, B, when said bar is provided with a stop at its end, and as a recess, as described, all constructed and operating substantially as specified.

77,137.—MACHINE FOR BORING HUBS.—J. W. Walters, Riceville, Iowa.

I claim the combination of the two shafts, A K, the latter having the crown gear wheel, G, tubular shaft, H, box, B, adjustable cutter, E, having the pinion, F, all operating as described for the purpose specified.

77,138.—PROCESS OF TREATING WOOLEN AND SILK GOODS.—Gardner Warren, Roxbury, assignor to himself and Hezekiah H. Bryant, Boston, Mass.

I claim the process of treating fabrics, made of wool, silk, or other animal fibers, with a solution of glycerin, substantially as described.

77,139.—BEEHIVE.—Jas. Wash, Mount Sterling, Ill.

I claim the combination of the box, C, provided with partitions having spaces, E, passages, h i, with the hives, C', substantially as and for the purpose described.

The combination, with the box, C, and hives, C', of the perforated passage, D, and outer housing, A, substantially as and for the purpose described.

The combination, with the box, C, and hives, C', of the perforated passage, D, and outer housing, A, and the self-adjusting guard, H, substantially as and for the purpose described.

The combination, with the hives, C', and long perforated passage, D, of an outer housing, provided with the odor passages, F, substantially as and for the purposes described.

77,140.—EGG CUP.—C. D. P. Watters, New York city.

I claim an egg cup consisting of the base, A, springing jaws, B, levers, D, and handle, E, all made and operating substantially as herein shown and described.

77,141.—SEED SOWER AND HARROW ATTACHMENT TO GANG PLOW.—J. B. Webster, Stockton, Cal.

I claim, 1st, The plow frame, a a' b, provided with means for attaching a seeder to its front end, and provided also with the frame, d d', at its rear end for the attachment of a seeder, substantially as described.

2d, The bracket, e, in combination with the plow frame, a a' b, as and for the purpose described.

77,142.—FARM GATE.—B. Weirich and John Smith, Middlebury, Ind.

We claim, 1st, the sections, C C', lever, h, and brace, k, combined and operated as and for the purpose described.

2d, The swinging bars, b b, sections, C C', lever, h, and brace, k, all arranged as described.

77,143.—MEAT CUTTER.—Charles Welte, Frankford, Pa.

I claim the combination of the revolving meat box, B, gear wheels, I and H, vertical shaft, G, bevel gear wheels, F and E, horizontal shaft C, crank wheel, D, gear wheels, J and K, short horizontal shaft, L, crank or crank wheel, M, connecting rod, N, pivoted and balanced lever, O, and slide, R, to which the cutter, T U V, is attached, substantially as herein shown and described, and for the purpose set forth

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77,144.—CHURN.—Amos Wescott, Syracuse, N. Y.

I claim the combination of the conical body, adjustable leg, horizontal dasher shaft, and alternately oblique dashers, and fan wheel, substantially as described, for the purposes set forth.

77,145.—HARVESTER.—Cyrenus Wheeler, Jr., Auburn, N. Y.

Division A.

I claim, 1st, A main frame, having an axle for the drive wheel, formed or cast on one side, and a hollow cylinder arm on the other side, for supporting the shaft of the bevel wheel.

2d, The main frame, as described, in combination with a tongue frame, hinged to the hollow cylindrical arm of the main frame.

3d, The combination of a main frame, having an axle for the driving wheel on one side, and a hollow cylindrical arm on the other side, with a crank frame hinged to said arm, so as to vibrate independently of the main frame in following the undulations of the surface of the ground over which it is drawn, substantially as described.

4th, The combination of a main frame, constructed as described, with a tubular box for holding the bevel wheel shaft.

5th, The crank frame, arranged and vibrating as described, in combination with a stop on the main frame, and a wheel and lever mounted on the shoe, for raising the cutting apparatus.

6th, The driver's seat, mounted on the main frame in a position behind the main drive wheel, in combination with a crank frame so hinged to said main frame as to vibrate independently of said frame and seat.

7th, Connecting the draught to a standard on the crank frame, in combination with hinging said crank frame to the main frame, on an axis coincident with the axis of the bevel wheel, but independent of the main axle.

77,146.—HARVESTER RAKE.—Cyrenus Wheeler, Jr., Auburn, N. Y. Division B.

I claim, 1st, In a combined reel and rake, the arms of which are hinged, independently of each other, to and travel around an axis perpendicular, or nearly so, to the platform, arranging said axis on the vibrating crank frame in front of a line drawn along the front edge of the finger bar.

2d, Mounting the axis of a combined reel and rake on a vibrating crank frame, which can rise and fall independently of the main or gear frame.

3d, The location of the axis of a combined reel and rake, upon a vibrating crank frame, behind the axis of the main wheel, in front of the finger bar, and outside of a line drawn across it at right angles, and touching the outside of the shoe.

4th, In a combined reel and rake, the arms of which are hinged to and move around an axis perpendicularly, or nearly so, to the platform, hinging the rake heads to the arms, and so combining them with mechanism, under the control of the driver, that the teeth of the rake shall, in reeling, retain a vertical position until they reach the finger beam, and then roll back to pass over the platform, and in raking retain a vertical position in their passage over the platform for the discharge of the gavels.

5th, Driving a combined reel and rake, located on one side of and below the highest point of the drive wheel, by mechanism connecting it with the hub of the wheel on the other side, substantially as described.

6th, Adjusting and supporting the crank frame and inner end of the cutting apparatus, in reaping, by a chain, connected with a lifting wheel and lever, mounted on the main frame, substantially as described.

7th, Changing the angle of cut and the inclination of the platform by means of a pinion in the draught frame, combined with a sectorgear on the main frame.

8th, The ridge board or inclined track on the grain divider, in combination with the overhanging ends of the rake heads.

9th, The employment of set screws, in combination with the rake and reel arms, and the revolving head, to which the arms are pivoted, for adjusting the height or angle of the rakes.

10th, A combined rake and reel, the arms or rake heads of which rotate about a shaft or pivot in advance of the finger bar, and are of sufficient length to reach the point of the divider in reeling in the grain, in combination with an inclined track or ridge board for raising the rake heads to pass the cutters.

11th, Automatically retracting the rake head, to cause the rake teeth to resume their vertical position by means of the lower heel end of the cam way acting upon the inner or heel end of the rake head, substantially as described.

77,147.—CARRIAGE HUB.—Martin Whelan, New Haven, Ct.

I claim the plate, C, provided with the arms, or lugs, a, combined with the hub, A, and spokes, B, and the plate, D, when the whole are constructed and united substantially in the manner herein set forth.

77,148.—DOVETAIL MACHINE.—T. D. White, Cincinnati, O.

I claim the combined arrangement of a series of saws of unequal diameters, and an olique table for feeding planks thereto, as and for the purposes herein specified.

77,149.—MACHINE FOR MAKING DOVETAIL MORTISES.—Thayer D. White, Cincinnati, Ohio.

I claim the removable block, B, having two oppositely inclined planes, B' B'', and employed in conjunction with the sliding gate, D, and chisels, d d, substantially in the manner and for the purpose set forth.

77,150.—CAR COUPLING.—W. F. Wickersham and Elisha Roush, Springfield, Ill.

We claim the combination of the rod or pin, D, gate, C, link, B, buffer, A, pivot, a', and arm a, substantially as shown and described, and for the purpose set forth.

77,151.—MACHINE FOR JOINTING STAVES.—Hiram S. Wiley, Madison, Ind.

I claim, 1st, The curved guides, B B, carrying the movable saw frame, G, said guides being concentric with the driving shaft placed above the frame, whereby the tension of the belt from said driving shaft to the pulley, H, on the saw carriage is regulated, as herein shown and described, for the purpose specified.

2d, The combination of the movable curved racks, C C, with the pinion M, and the movable saw bed, G, substantially in the manner herein shown and described.

3d, The devices, m2 m2 m m h h' g g n, and the treadle, k, for operating the curved racks, C C, working together, substantially as herein shown.

4th, The clamps, c c' c r' r', and their connections, m m m1 m1, for operating, the same, as substantially set forth.

5th, The combination of the catch, e, and its wiper, f, with the saw bed and lifting devices, substantially as herein shown described.

77,152.—SLIDE VALVE.—William Wilson, Galesburg, Ill.

I claim, 1st, A steam sliding valve, provided with two exhaust chambers, C, and the two exhaust steam passages, a2, and the steam passage, a1, whereby the steam is both admitted to and exhausted from a steam cylinder by double openings, substantially as shown and described.

2d, A steam valve provided with the steam passage, a1, and the exhaust passage, a2, and the chambers, C, in combination with the steam and exhaust ports, of any valve seat, A, substantially as shown and described and for the purposes set forth.

77 153.—CONCRETE BRICK PRESS.—J. H. Wirt, Delphi. Ind.

I claim, 1st, The compound toggle joint, consisting of the torgle bar, k, link rod, e, step lever, h, and lever, a, substantially as shown and described, in combination with the uprights, d, and bottoms, u, for the purpose of compressing concrete blocks, all arranged as set forth.

2d, The press constructed as described, and consisting of the molds, b, cover, C, link, E, lever, D p, bottoms, u, uprights, d x, guide, m, lever, G r s, toggle bar, k f l, step lever, h i, link, e, and lever, a, all arranged within the frame, A, and operating in the manner and for the purpose set forth.

77,154.—FERMENTATION BUNG.—Wm. W. Woodruff, New Britain, Conn.

I claim the bung, a, cup, a', tube, a'', and cap, b, constructed and arranged substantially as and for the purpose described.

77,155.—DROP HAMMER.—James Wool (assignor to himself and F. Hunnewell), Boston, Mass.

I claim in combination with the weight, and lifting rollers of a drop hammer, a lifter having a stiff central body of wood, or its equivalent, faced on both sides with leather, or other equivalent yielding material substantially as and for the reasons set forth.

77,156.—APPARATUS FOR CARBONIZING GAS.—Wm. H. Laubach, Philadelphia, Pa.

I claim the hollow glass gage tube, C, caps, f f, straps, d d, set screw, e, and tubes, g g, in combination, made in the manner and for the purpose described.

REISSUES.

2,920.—GEARING.—The Metropolitan Washing Machine Co., Middlefield, Conn., assignees of S. W. Palmer and J. F. Palmer, Auburn, N. Y. Patented May 8, 1866.

We claim the combination of toothed or cogged wheels, when used in pairs upon the same shaft, with a plate or plates arranged upon the interior opposite or exterior opposite faces of either pair, in the manner described, whereby the wheels on the one shaft shall be held in place by the plate or plates of the wheels on the other shaft, and thus prevent the lateral play of the one shaft with respect to the other, as set forth.

2,921.—CONSTRUCTION OF JUG TOPS.—Homer Wright, Henry H. Collins, and Benj. F. Collins, Pittsburg, Pa., assignees of Homer Wright. Patented Sept. 24, 1867.

I claim, 1st, The flange, S, when made as and for the purpose shown.

2d, The hinge and knob combined in one piece, as specified.

3d, The lid, when made to cover entirely the top rim of the body, as set forth.

4th, The opening, H, in the lid, when used in combination with the hinge and knob piece, as described.

5th, The convex bulge, P, or its equivalent, when used for the purpose indicated.

6th, Hinging the lid so as to rotate from the inside of the body, as described.

DESIGNS.

3,000.—BURIAL CASKET.—Wm. G. Algeo, Pittsburg, Pa.

3,001.—STOVE.—Isaac J. Baxter, Peekskill, N. Y.

3,002.—ORNAMENTATION OF A HORSE BRUSH.—James A. Bradley and Foster N. Smith, New York city.

3,003.—TRADE MARK.—J. H. Garnhart, St. Louis, Mo.

3,004.—LEGS OF A TABLE.—Willard Jefts, Battle Creek, Mich.

3,005.—SAD IRON.—Anna Niffeler, Chicago, Ill.

3,006.—CLOCK CASE.—Noah Pomeroy, Hartford, Conn.

3,007.—TRADE MARK.—Geo. L. Witsil, Philadelphia, Pa.

3,008.—ORNAMENTING TRUNKS, ETC.—Henry Wolf, Detroit, Mich.

PENDING APPLICATIONS FOR REISSUES.

Application has been made to the Commissioner of Patents for the Reissue of the following Patents, with new claims as subjoined. Parties who desire to oppose the grant of any of these reissues should immediately address MUNN & CO., 37 *Park Row, N. Y.*

69,612.—ROOFING COMPOUND.—Oscar N. Bartholomew, and J. S. Thurston (assignees of Oscar N. Bartholome, and W. P. Sherman), Elmira, N. Y. Dated October 8, 1667. Application for reissue received and filed March 11, 1868.

We claim a compound of matter compounded from the ingredients named, and in the manner substantially as and for the purpose set forth.

70,247.—LAMP.—HOWARD TILDEN (assignee of William Mullaly), Boston, Mass. Dated October 29, 1867. Application for reissue received and filed March 27, 1868.

I claim, 1st, Supporting the top or dome of the blaze cap upon a cylindrical base arranged somewhat above the convex base, G, so as to leave an opening between it and the base for the air to pass out and up, to supply air to the flame above the cap, and keep the bottom of the chimney and the base cool.

2d, The deflectors, J J, extending down from the ends of the slot in a blaze cap, with closed sides, substantially as described.

3d, Making lugs or supports on the base plate, to fit recesses in the side of the cap, so that the cap may be readily removed from the base plate, to trim the wick and clean out the base.

4th, In combination with the base on the base plates, A and G, I claim the pins or lugs thereon, for supporting the chimney and the wires or springs, k k, for keeping it in place, substantially as described.

57,125.—PULLEY ATTACHMENT FOR RAISING WEIGHTS.—Geo. W. Gregory, Watertown, N. Y. Dated August 14, 1866. Antedated February 14, 1866. Reissue No. 2,784. Dated October 22, 1867. Application for reissue received and filed March 27, 1867.

I claim, 1st, As an adjustable pulley support, having one or more sockets or their equivalents, by and through which the pulley support may be operated and changed from place to place substantially as described.

2d, An adjustable pulley support, provided with sockets or equivalents and with means for supporting the pulley, substantially as described.

3d, The combination of an adjusting pole, with a pulley support, having sockets or equivalents, substantially as and for the purpose set forth.

73,937.—WATCH.—O. F. Stedman, Ravenna, Ohio. Dated January 28, 1868. Application for reissue received and filed March 27, 1868.

I claim the ring or band, C, bevelled or made thin at one edge or side, said band being made narrower than the movement, and wide enough to cover the space between the plates, a and b, substantially as and for the purposes herein set forth.

11,892.—MANUFACTURE OF BUCKLES.—The West Haven Buckle Company, West Haven, assignees of Sheldon S. Hartshorn, Orange, Conn. Dated November 7, 1354. Application for reissue received and filed March 28, 1868.

We claim, 1st, A bushel, in which the tongue is constructed so as to clasp the divided side, so that while it sustains the said divided side, it will turn freely thereon substantially in the manner herein set forth.

2d, The combination of the two parts or loops, one side of which is divided and the two parts or loops, hinged together as described, and the divided side sustained by the tongue, clasped and hinged thereon, substantially as set forth.

44,337.—PUMP.—Eli Perry, Baldwinsville, N. Y. Dated September 20, 1864. Application for reissue received and filed March 30, 1868.

I claim, 1st, The combination with the wings, E, of the concentric arms, or extensions, E', forming a division between the discharge space, B, and the interior of the case, except through passages, i, in the manner and for the purpose specified.

2d, The combination with the wings, E, and extensions, E', of the flanges, k, in the manner and for the purpose specified.

3d, Forming the under side of the wings, with sharp edges, l l, the same being used in combination with the floor of the case, A, substantially as described.

70,245.—IRON BRIDGE.—David H. Morrison, Dayton, Ohio. Dated October 29, 1867. Application for reissue received and filed March 31, 1868.

1st, The construction of the arch or top chord of a bridge by the use of the iron, I, beam, when arranged therein with its double flanges, in vertical planes, substantially as described, for the purpose specified.

2d, The universal washer, B f, constructed and applied in the manner and for the purpose specified.

3d, The combination and arrangement of the arch beams, C, arch, joint plates, g, and universal washer, B f, when constructed, connected, and operating, conjointly in the manner substantially as and for the purpose specified.

4th, The combination of the returned ends, p' p', of the chord bars, a, with the skew back, D, and block, r', substantially as and for the purpose specified.

73,552.—SASH FASTENING.—C. M. Amsden, Wooster, Ohio. Dated January 21, 1868. Application for reissue received and filed 1st, 1868.

1st, The use of a lever, having its fulcrum on the face of the sash or door, and acting in combination with a sash or door bolt, for the purpose of operating said bolt, substantially as herein specified.

2d, The lever, L, with hole, R, and slot, S, constructed and used substantially in the manner and for the purpose herein specified.

3d, The bolt, D, with arms, N O, and peculiarly shaped head, P, and with or without the spindle, F, the several parts being constructed and arranged as herein specified.

4th, The peculiar arrangement and combination of the bolt, D, with arms, N O, hole, H, slot, V, and lever, L, with hole, R, and slot, S, the several parts being arranged in the manner and for the purpose specified.

12,382.—MAGAZINE SMOKE CONSUMING STOVE.—James Easterly, Albany, N. Y. Dated February 13, 1855. Application for reissue received and filed April 3, 1868.—Division 1.

I claim constructing a stove as herein described, with openings for the admission of air to the burning fuel, at some point or points above the grate, including between said points and the grate sufficient fuel for ignition at any one time, substantially as described.

12,382.—MAGAZINE SMOKE CONSUMING STOVE.—James Easterly, Albany, N. Y. Dated February 13, 1855. Application for reissue received and filed April 3, 1858.—Division 2.

1st, A cooking stove, which is provided with a coal supply magazine, and a combination chamber, arranged without the space inclosed by the outer walls of the stove, substantially as described.

2d, The combination of a coal supply magazine, with a cooking stove, when such magazine is wholly ontside of the outer walls of the stove, substantially as described.

3d, In a cooking stove, having a magazine for supplying the combustion chamber with fuel, I claim inlets for the admission of air to the burning fuel, arranged at some point or points above the grate, substantially as described.

4th, The relative arrangement of the several parts of the stove, whereby the heated products are caused to circulate around the oven, substantially as described.

70,510.—PREPARING CEMENTS FROM SLAGS.—John J. Bodmer, Newport, England. Dated Nov. 5, 1867. Application for reissue received and filed March 26, 1868.

1st, I claim the rolling, laminating, grinding, and otherwise reducing or converting to scale or sheets, or to a lamellated or to a pulvurulent state or condition, the cinder, slag, or scoria obtained from blast furnaces, copper smelting, or other furnaces, in a fluid or semi-fluid or pasty or viscous condition, in the manner and for the purposes substantially as described, and for other purposes.

2d, The rolling, laminating, grinding, and otherwise reducing or converting to scale or to a lamellated or to a pulvurulent condition, of various descriptions of cement and of materials from which cements are to be produced, substantially as described.

3d, The application of slag, cinder, or scoria, whether artificially prepared for the purpose or as obtained from blast furnaces or other furnaces in the manufacture of cement and the several modes or processes employed in the preparation of cements, substantially as described.

4th, The manufacture of artificial stone from the above described cements, either by themselves or with the admixture of coarsely ground materials such as furnace slags, scoria, any descriptions of hard stones, or of shingle, sand or other materials of a similar nature.

70,247.—LAMP.—Howard Tilden (assignee of Wm. Mullally), Boston, Mass. Dated Oct. 29, 1867. Application for reissue received and filed March 27, 1868.

I claim as the invention of Wm. Mullally, 1st, Supporting the top or dome of the blaze cap upon a cylindrical base arranged somewhat above the convex base, G, so as to leave an opening between it and the base for the air to pass out and up to supply air to the flame above the cap and keep the bottom of the chimney and the base cool.

2d, The deflectors, J J, extending down from the ends of the slot in a blaze cap with closed sides, substantially as described.

3d, Making lugs or supports on the base plate to fit recesses in the side of the cap, so that the cap may be readily removed from the base plate to trim the wick and clean out the base.

4th, In combination with the base or the base plates, A and G, I claim the piers or lugs thereon for supporting the chimney, and the wires or springs, K K, for keeping it in place, substantially as described.

75,070.—HARVESTER.—Wm. H. Stevenson, Auburn, N. Y. Dated March, 3, 1868. Application for reissue received and filed April 4, 1868.

I claim, 1st, The combination with a dished driving spur wheel, D, of a spur pinion, E, bevel wheel, H, and bevel pinion, I, which will admit of the arrangement of the crank shaft, J, substantially as and for the purpose specified.

3d, The arrangement of the gear wheels, D E H I, the wheel, E, running loosely on a shaft, F, and being provided with a clutching face, f, and shipping lever, G, substantially as described.

3d, The adjustable shifter holder and guide, G, constructed in one piece and attached to the main or draft frame by bolts passing through one or more slots in the shifting plate, G2, whereby the shifter fork may be adjusted to the groove in the spur pinion, substantially as described.

4th, The combination with the drag bar of a curved guide, S, moving endwise, of a guide box, K, arranged on the main frame, substantially in the manner described, whereby an unobstructed space is left below the frame when the drag bar is raised.

5th, The arrangement of the adjusting lever, T, linked connection, L, and curved guide, S, the latter working loosely in a guide box, K, on the frame, in combination with the drag bar, P, all substantially in the manner shown and described.

15,882.—HARVESTER.—John G. Perry, Kingston, R. I., assignee by mesne assignments of Carlos W. Glover, Roxbury, Conn. Dated Oct. 14, 1856. Application for reissue received and filed April 6, 1868.

I claim as the invention of Carlos W. Glover, 1st, So constructing and operating the vibrating sickle driving mechanism of a harvesting machine, that such mechanism shall work through the driving wheel of the machine.

2d, The combination of the cogs, e, on the driving wheel, the pinion, f, upright shaft, C, and wheel, g, with the pinion, h, of the shaft, D, arranged substantially as and for the purpose specified.

3d, The combination with the driving wheel of the guide box carrying the sickle bar, in such manner that the bar may be adjusted for cutting at a greater or less hight, substantially as herein set forth.

41,746.—HARVESTER.—Mitchell, Vance & Co. (assignees of Edgar M. Smith), New York city. Dated Feb. 23, 1864. Application for reissue received and filed April 6, 1868.

We claim, 1st, In combination with the main driving and supporting wheels running loosely on their axles or journals, the main gear wheels, D, running loosely on the hubs of said drive wheels, and having a ratchet and pawl connection with each other, substantially in the manner and for the purpose herein described and represented.

2d, The arrangement of the two sets of plates and boxes on the opposite sides of the main frame, so that the cutting apparatus may be arranged on either side, as set forth.

3d, In combination with the two sets of plates arranged on opposite sides of the main frame, the curved bar or brace, F, extending from one to the other, so as to leave unobstructed space at 1, for the free action of the rake as described.

4th, In combination with the loose and shifting main wheels and main cogged gears, the pinions, b, permanently arranged on the shaft, d, so that said loose and shifting wheels will, when on either side of the machine, mesh with said pinions as set forth, whichever end of the machine goes foremost

5th, Hanging the reel blades to the reel shaft by means of the crossed arms and adjustable heads, hubs or sockets, for the purpose of enlarging or diminishing the circumference of the reel, substantially as described.

6th, The adjustable pulley plate and adjustable pulley thereon, for the purpose of taking up or letting out the reel belt, when the reel is lowered or raised on its support, substantially as described.

15,334.—CUTTING DEVICE FOR HARVESTERS.—John G. Perry, Kingston, R. I., assignee by mesne assignments of Carlos W. Glover, Roxbury, Conn. Dated July 15, 1856. Application for reissue received and filed April 6, 1868.

I claim as the invention of Carlos W. Glover, 1st, The combination with the guard fingers, of the leger blades or cutters, constructed with recesses in their upper sides, substantially as and for the purpose specified.

2d, So arranging the leger blades or cutters within the guard fingers that they may have a rocking or oscillating movement during the vibratory movement of the sickle, substantially as herein set forth.

3d, The attachment of the leger blades to the guard fingers by means of the projections, e, on the blades, extending into the cavities, f, in the fingers, substantially as and for the purpose specified.

46,846.—SCREW CUTTING MACHINE.—Charles Parker (assignee of Stephen W. Goodyear), Meriden, Conn. Dated March 14, 1865. Application for reissue received and filed April 8, 1868.

I claim as the invention of Stephen W. Goodyear, 1st, The combination of the rotating grooved cylinder with a fixed covering plate which bears horizontally upon the shanks of the blanks, but end wise against their heads, and with a movable covering plate, for the purposes and in the manner substantially as described, thus forming a conveying tool.

2d, The combination of the die or groove, i, constructed so as to hold a blank, in combination with a jaw forming together a vise in which the blank may be held firmly for such operation as nicking, or a journal in which the blank may be rotated for threading, etc., thus forming a holding tool.

3d, I claim the combination of a cylinder, such substantially as is herein described as having its fixed and movable covering plates, with the curved feeding slide trough, whereby without the use of the usual system of grippers, etc, the blank may be conveyed to the place where it is to be operated upon, as set forth.

4th, The employment of the semicircular groove, i, as a rest, while the cutter operates on a blank, when the said groove is constructed so as to act as a conveying tool.

64,554.—FRICTION PAWL.—Joseph Moore, San Francisco, Cal. Dated May 7, 1867. Application for reissue received and filed April 8, 1868.

I claim the employment upon the main or a countershaft of the windlass in hoisting apparatus, of a pulley which shall be on the one hand under the control of a brake, and on the other hand be connected with the shaft by the pawl and ratchet device or its equivalent, substantially in the manner and for the purposes set forth.

27,319.—BENDING SHEET METAL.—Orson W. Stow, Plantsville, Conn. Dated Feb. 28, 1860. Application for reissue received and filed April 9, 1868.

I claim, 1st, Making the folding bar commonly used in such machines in two parts, f and i, one part, i, being adjustable in respect to the folding plate, e, by means of set screws, n, or other equivalent means, so as to form a close or open lock, for joining two pieces of metal plate, or closing around a wire, substantially in the manner as described.

2d, I claim arranging the griping jaw, s, with the folding bar, f and i, in such a manner that on motion being given to the folding bar, f, on its axis, g, the griping jaw, s, is made to close on the folding plate, e, and at the same time carry along with it the folding bar, f, into such a position as will bring its axis, g, of motion nearly into a line with the edge of the folding plate, e, thereby placing the folding plate, f and i, in position to be turned over on to the folding plate, e, necessarily and simultaneously with the motion of the folding bar, f and i, on its axis, g, substantially in the manner as described.

3d, I claim the bed plate proper, a a', to which is secured the folding plate, e, in combination with the hinged frame, b, having journal boxes, d, and griping jaws, the folding bar, f and i, fixed or adjustable, and having journals, g, cams, o, arranged and operating together substantially in the manner as and for the purpose described.

4th, In a machine which uses but one folding bar, I claim the combination of the folding plate with the folding bar, when so constructed and operating together that the distance between their adjacent edges can be increased or diminished at pleasure, for the purpose of forming both open and close locks or bends in sheet metal.

60,151.—PRINTER'S GALLEY.—R. Hoe & Co. (assignees of Alex. T. De Puy), New York city. Dated Dec. 4, 1866. Application for reissue received and filed April 9, 1868.

I claim as the invention of Alex. T. De Puy, the combination with the wooden frame of a printer's galley, of a metallic lining, secured thereto by means of a groove or grooves, substantially as and for the purpose specified.

66,268.—PACKAGE FOR HOLDING AND SHIPPING LARD.—Charles L. Tucker, Chicago, Ill. Dated July 2, 1867. Application for reissue received and filed April 10, 1868.

DIVISION A.

I claim, 1st, The box herein described, when constructed without a lid or cover, rim, and with straight, even sides from top to bottom, substantially as and for the purposes specified.

2d, The application of gum arabic or its equivalent to lard packages for the purpose of making them non-absorbing, substantially as specified.

DIVISION B.

I claim, 1st, The application or use of a tin or lead foil, or foil paper, covering for lard packages, constructed of wood or paper, substantially as and for the purposes specified.

2d, The employment in packing lard of small wood or paper packages holding specific quantities, suitable for retailing in the original package, substantially as specified.

DIVISION C.

I claim the mode herein described of packing lard for transportation or storage, by first packing the lard in separate small packages of wood or paper and inclosing such small packages in an outer close fitting case, substantially as specified.

☞ NOTE.—*The above claims for Reissue are now pending before the Patent Office and will not be officially passed upon until the expiration of* 30 *days from the date of filing the application. All persons who desire to oppose the grant of any of these claims should make immediate application.* *MUNN & CO., Solicitors of Patents, 37 Park Row, N. Y*

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[Compiled from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

792.—MACHINE FOR HULLING OR DECORTICATING COTTON OR OTHER SEED Alex. H. Simmonds, New York city. March 7, 1868.

808.—SCREW BOLTS AND NUTS FOR SECURING FISH PLATES, ETC.—Frederic Tudor, Boston, Mass, March 9, 1868.

754.—SPIRIT METER.—Robert Creuzbaur, New York city. March 4, 1868.

760.—MECHANISM FOR PREPARING AND SEWING SOLES UPON BOOTS AND SHOES.—Lyman R. Blake, Boston, Mass. March 5, 1868.

803.—MACHINE FOR MAKING NUTS.—Philippe Koch, New Haven, Conn March 7, 1868.

815.—PROCESS FOR MAKING ARTICLES FROM HARD RUBBER CAPABLE OF BEING MOLDED IN DIES, AND INLAYING AND ATTACHING METALLIC PLATES.—Wm. H. Halsey, Hoboken, N. J. March 9, 1868.

853.—BALLASTING VESSELS.—John B. Stoner, Leopold Mendelson, and Theodore Crommelin, New York city. March 12, 1868.

891.—MANUFACTURING ILLUMINATING GAS IN THE DISTILLATION OF HYDROCARBONS AND MAKING GASEOUS FUEL FOR HEATING.—Levi Stevens, Washington, D. C. March 16, 1868.

892.—TELEGRAPHIC APPARATUS.—Elisha W. Andrews and Edward A. Calahan, New York city. March 16, 1868.

895.—MACHINERY FOR COMBING COTTON, ETC.—Ira Dimock, Florence, Mass March 16, 1868.

944.—MACHINE FOR OVERCOMING RESISTANCE.—Henry F. Shaw, West Roxbury, Mass. March 19, 1868.

905.—SUBSTITUTE FOR HAIR STUFFING, AND MODE OF MANUFACTURING THE SAME FROM VEGETABLE FIBERS.—Nathan W. Blanchard, Dutch Flat Cal. March 17, 1868.

909.—PRODUCING STEEL AND CAST STEEL.—Alois Thoma, New York city March 17, 1868.

912.—COCHLEAMETER.—Samuel Curtiss, Jr., Williamsburg, N. Y. March 17, 1868.

920.—COVERING FOR FLOORS.—Wm. Howell, Jas. C. Fenn, and Chas. H. Day, Philadelphia, Pa. March 18, 1868.

931.—VENTILATING WINDOWS AND WINDOW BLINDS.—Wm. P. Hoffman San Francisco, Cal. March 19, 1868.

935.—MACHINERY FOR COMBING COTTON, ETC.—Milton D. Whipple, Cambridge, Mass. March 19, 1868.

947.—MACHINERY FOR OPENING AND CLEANING WOOL, ETC.—Chas. G. Sargent, Graniteville, Mass. March 20, 1868.

972.—METALLIC COTTON BALE TIE.—Jos. W. Branch and Joseph Crookes, St. Louis, Mo. March 23, 1868.

1,083.—MECHANISM FOR TAKING UP THE RECOIL OF HEAVY ORDNANCE.—Chas. S. Tyson, Prince George county, Md. March 30, 1868.

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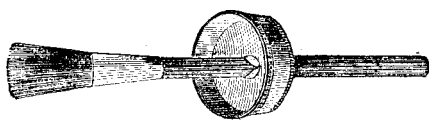

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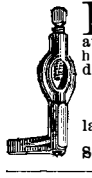

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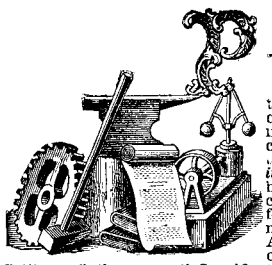

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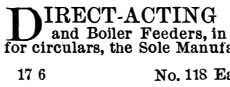

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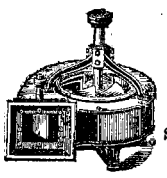

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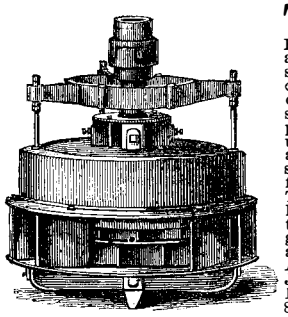

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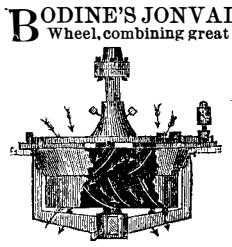

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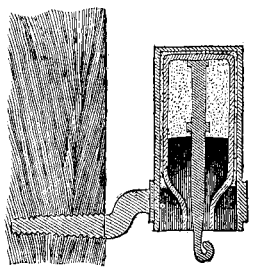

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